4.1 Studies on naturally infected or spontaneous clinical cases of bovine and bubaline papillomatosis

Bovine cutaneous papillomatosis (BOCP) comprising of cattle cutaneous warts (CCWT) and cattle teat warts (CTWT) and bubaline cutaneous papillomatosis (BUCP) comprising of buffalo cutaneous warts (BCWT) and buffalo teat warts (BTWT) were randomly investigated in hot and humid climatic zone of tropical West Bengal. Screening of clinically positive highly papillomatous dermal lesions and or cutaneous warts was made through random survey. Clinical findings, epidemiological data, gross pathological findings, PCR based diagnosis and results of different regimes of treatment were illustrated in tables.

4.1.1 Clinical examination:

Clinical examination of total one thousand seven hundred sixty nine (n = 1769) numbers of naturally infected bovine (BOCP, n = 1640) and bubaline wart cases (BUCP, n = 129) as recorded during the survey period from August 2008 to January 2013, was judiciously made.

The body temperature of infected animals was within the normal range (37-38.5 °C). The appetite, rumination, urination, pulse and respiration of infected cattle and buffaloes was normal. The body condition of heavily infected cattle and buffaloes were poor. Distribution of lesions or anatomical site or locations of warts, number (wart count per animal), size, shape and dimension, breed, age, sex of the afflicted animals, gross morphology of the lesions, duration of infection as recorded were shown in tables (Table 1-32, meant for field survey; Table 33-68, meant for institutional survey/ survey in Veterinary clinics; Table 69 &71, meant for organized farm survey and Table 70, meant for abattoir survey, Table -72, meant for farm survey for teat papillomatosis (TP) in un-organized sector).

Gist of year wise incidence of cattle and buffalo cutaneous wart including teat papilloma / teat wart has shown in table (Table-73) reflecting higher incidence of both BOCP and BUCP occurred during the year 2010.

Clinically low to moderate number of warts was seen in buffaloes and in cattle mostly moderate and even numerous numbers of warts were observed. In the dairy herds where young cows and buffaloes were kept together there were also clinically affirmative cases of cutaneous or teat wart incidences in buffaloes. It appeared that buffaloes got infected from infected cattle. Solitary (individual) or clusters of papillomas were recorded clinically both in cattle and buffaloes. Severe form of the disease was also recorded in cattle where large area of the body was involved and animals so affected suffered from great ill thrift.
Technical terms used to describe the lesions as a single wart as papilloma, the plural one as papillomata and the disease warts as papillomatosis would be used in the text. The lesions as observed in animals were the raised tumours on the skin from barely perceptible range to large ones of several millimetre diameters easily detectable at a glance from distance. Besides topographically specific papillomas whole body papillomatosis were also recorded during the survey and examination of animals.

Gross observations revealed morbid manifestations of dermal highly papillomatous lesions and or exophytic warts with cauliflower-like shape, warts with many finger like outgrowths, lobulated small to medium sized warts, dome shaped, button like (discrete, low, flat and circular lesions), pea shaped, mulberry like warts, flat warts attached by broad base, warts with narrow stalk, warts with broad base, less pedunculated small warts, conical growing on a pedicle, club shaped warts, exophytic squat type, typical tag type, rough towel surface like horny warts and so many types typically found as papilloma tuberosum in both BOCP and BUCP cases. Either sessile or pedunculated warts were seen in the affected animals, having either single solitary lesion or having multifocal scattered lesions, seen elsewhere on the animal body. Cutaneous papillomas in cattle mostly appeared as multiple, sessile or pedunculated, circumscribed grey-white to dark brown black solid outgrowth, which of course was found to be smooth surfaced in few TP cases too (as shown in tables showing gross pathological observations). In cattle the warts were mostly seen on the skin of head, eyes, ears, face, neck, and thorax and fore limbs showing anterior regional affection and on hind limbs, back, belly, axilla, perineum, teats and udder showing posterior regional affection of BP.

Papillomatosis in buffaloes occurred in sporadic form and was being manifested as cutaneous warts and teat papilloma types. Infection in buffaloes was recorded as cross species infection and the lesions appeared mostly in diffuse or in scattered form. Paragenital warts were also recorded during the physical survey, as presented in tables showing gross pathological observation on warts. Extensive persistent case of CWT was not found in buffalo which was recorded in case of cattle wart. White cauliflower like big lumpy outgrowth or giant type wart cases were recorded in few buffaloes tightly attached to the surface cutaneous which was not seen in case of cattle. Involvement of large areas of animal body as seen in good many cases of CCWTs was scarcely recorded in buffaloes. Sessile (squattype), pedunculated (stalked) and flat type warts as seen in cattle, were also seen in buffaloes. In the buffalo, fibro-papillomas were found on the back, in the gluteal region, in the vulvar, perivulvar and at peri-anal regions, all common sites of scraping and scratching.
Table-1: Field level survey on bovine and bubaline cutaneous papillomatosis in Bankura district of West Bengal

<table>
<thead>
<tr>
<th>Sl No</th>
<th>Period of survey</th>
<th>Owners name &amp; address</th>
<th>Species affected with herd strength</th>
<th>Category of animals affected</th>
<th>Gross clinical observations with size &amp; number</th>
<th>Severity of infection</th>
<th>Duration of infection</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>BKU-1</td>
<td>Nov-2009</td>
<td>Uttam Das Muktapur, Patrasayer Block</td>
<td>Cattle-12: ND-7, CBJ-5</td>
<td>CBJ Heifer-1, 2 years</td>
<td>Multiple cauliflower like, pedunculated warts (2-3cm) around left eye and corners of the mouth, n = 26</td>
<td>++++, Moderate</td>
<td>4 Months</td>
<td>Thuja 200X by S/C route</td>
</tr>
<tr>
<td>BKU-2</td>
<td>Nov-2009</td>
<td>Kanak Dan Patrasayer Block, Vill-Labason</td>
<td>Cattle-15, ND-12, CBJ-3, Buffalo-2</td>
<td>ND Heifer-1, 1.5 year</td>
<td>Small (1-1.5cm), scattered non pedunculated warts on ear tips, eye lids and distal fore legs, n = 7</td>
<td>+, Mild</td>
<td>4 months</td>
<td>Thuja 200X by S/C route</td>
</tr>
<tr>
<td>BKU-3</td>
<td>Nov-2009</td>
<td>Rasomoy Dan Patrasayer Block, Vill-Labason</td>
<td>ND Cattle-10, Buffalo-2</td>
<td>Male Buffalo-1, 4 years</td>
<td>Florid wart (4 cm) with horny projections on inner surface of left pinna, n = 1</td>
<td>+, Mild</td>
<td>5 months</td>
<td>Thuja 200X by S/C route</td>
</tr>
<tr>
<td>BKU-4</td>
<td>Nov-2009</td>
<td>Nirmal Bagdi Patrasayer Block, Vill-Parulia</td>
<td>ND Cattle-5</td>
<td>ND Heifer-1, 2 years</td>
<td>Clustered of warts, squat type (2-5cm) seen on neck, trunk and axillae, n = 80, pedunculated type</td>
<td>++++, Severe</td>
<td>6 Months</td>
<td>Thuja 200X by S/C route</td>
</tr>
<tr>
<td>BKU-5</td>
<td>Nov-2009</td>
<td>Sekhar Banerjee Patrasayer Block, Vill-Kushadwip</td>
<td>ND Cattle-6</td>
<td>ND Young bull-2.5 years</td>
<td>Asbestos like greyish white crusty non pedunculated warts (2-3cm) on back and barrel, n = 20</td>
<td>++++, Moderate</td>
<td>6 Months</td>
<td>Thuja 200X by S/C route</td>
</tr>
<tr>
<td>BKU-6</td>
<td>Nov-2009</td>
<td>Nimai Banerjee Patrasayer Block, Vill-Kushadwip</td>
<td>ND Cattle-4</td>
<td>ND Heifer-1, 2 years</td>
<td>Nodular non pedunculated warts (2-2.5cm) on rump slope, chest and wither, n = 16</td>
<td>++++, Moderate</td>
<td>5 months</td>
<td>Inj Anthiomaline tried</td>
</tr>
<tr>
<td>BKU-7</td>
<td>Nov-2009</td>
<td>Bimal Kapri Patrasayer Block, Vill-Banbirsingha</td>
<td>Buffalo-6</td>
<td>Murrah she buffalo-1.6 years</td>
<td>Multiple frond type non pedunculated warts (1-1.5cm) on teats, n =18</td>
<td>++++, Moderate</td>
<td>6 Months</td>
<td>Thuja 200X by S/C route</td>
</tr>
<tr>
<td>BKU-8</td>
<td>Nov-2009</td>
<td>Bikash Karak Patrasayer Block, Vill-Rasulpur</td>
<td>ND Cattle-10, Buffalo-2</td>
<td>ND Young bull, 3 years</td>
<td>Multiple lobular pedunculated warts (2-2.5cm) on flank and perineum, n = 20</td>
<td>++++, Moderate</td>
<td>6 Months</td>
<td>Thuja 200X by S/C route</td>
</tr>
<tr>
<td>BKU-9</td>
<td>Nov-2009</td>
<td>Bahadur Bagdi Patrasayer Block, Vill-Balsi</td>
<td>ND Cattle10</td>
<td>ND Young bull-2.5 years</td>
<td>Multiple cauliflower like pedunculated warts (2-2.5cm) on ear tips, eyes and chin, n = 14</td>
<td>++++, Moderate</td>
<td>7 Months</td>
<td>Inj Anthiomaline tried</td>
</tr>
<tr>
<td>BKU-10</td>
<td>Nov-2009</td>
<td>Madhusudan Bagdi Patrasayer Block, Vill-Talpukurparh, Hamirpur</td>
<td>ND Cattle-5</td>
<td>ND MC-1, 11 Months</td>
<td>Multiple cauliflower like pedunculated warts (3-4cm) on face, eyes, ears and fore limbs, n = 23</td>
<td>++++, Moderate</td>
<td>6 Months</td>
<td>Thuja 200X by S/C route</td>
</tr>
<tr>
<td>BKU-11</td>
<td>Nov-2009</td>
<td>Nepal Bagdi Patrasayer Block, Balshi</td>
<td>Cattle-6: ND-3, CBJ-3</td>
<td>CBJ HF-1, 2 Years</td>
<td>Vegetative warty growths (2-3cm) around left eye, n = 10, Non pedunculated type</td>
<td>+, Mild</td>
<td>3 Months</td>
<td>Inj Anthiomaline tried</td>
</tr>
<tr>
<td>BKU-12</td>
<td>Nov-2009</td>
<td>Subhash Mondal Patrasayer Block, Panchpara</td>
<td>ND Cattle-6</td>
<td>ND Young bull-3.5 years</td>
<td>Multiple conical, pedunculated warts (1-3 cm) over head and around eyes, n = 21</td>
<td>++++, Moderate</td>
<td>4 Months</td>
<td>Thuja 200X by S/C route</td>
</tr>
<tr>
<td>BKU-13</td>
<td>Nov-2009</td>
<td>Lakshmi Narayan Sapai Patrasayer Block, Vill-Panchpara</td>
<td>ND Cattle-6</td>
<td>ND Bullock-1, 3 years</td>
<td>Multiple cauliflower like pedunculated warts (3-3.5cm) on neck, below the hump and on thorax, n = 20</td>
<td>++++, Moderate</td>
<td>6 Months</td>
<td>Inj Anthiomaline tried</td>
</tr>
<tr>
<td>BKU-14</td>
<td>Nov-2009</td>
<td>Naba Kumar Bagdi</td>
<td>ND Cattle-2</td>
<td>ND Castrated MC-1,</td>
<td>Vegetative non pedunculated warty growths (1-</td>
<td>+, Mild</td>
<td>3 Months</td>
<td>Inj Anthiomaline tried</td>
</tr>
<tr>
<td>BKU-15</td>
<td>Nov-2009</td>
<td>Patrasayer Block, Suksayer</td>
<td>CBJ Cattle-4</td>
<td>11 Months</td>
<td>Multiple cauliflower-like pedunculated warts (2-2.5cm) around left eye, n = 10</td>
<td>++++, Moderate</td>
<td>5 Months</td>
<td>Ivermectin orally tried</td>
</tr>
<tr>
<td>BKU-16</td>
<td>Nov-2009</td>
<td>Anil Karak Patrasayer Block, Raghubati</td>
<td>ND Cattle-5, Buffalo-5</td>
<td>Young bull-3 years</td>
<td>Multiple cauliflower-like pedunculated warts (2-3cm) on fore limbs, n = 26 (horny warts)</td>
<td>++++, Moderate</td>
<td>4 Months</td>
<td>Thuja 200X by S/C route</td>
</tr>
<tr>
<td>BKU-17</td>
<td>Nov-2009</td>
<td>Asswini Lohar Borobbandi, Patrasayer Block</td>
<td>ND Cattle-3</td>
<td>Castrated ND MC-1, 10 Months</td>
<td>Diffuse round to oval shaped, horny pedunculated warts (1-2cm) on around eyes, ear and neck, n = 8</td>
<td>+, Mild</td>
<td>6 Months</td>
<td>Autohaemotherapy</td>
</tr>
<tr>
<td>BKU-18</td>
<td>Nov-2009</td>
<td>Mridul Kundu Garer Danga, Patrasayer Block</td>
<td>ND Cattle-4</td>
<td>ND Young bullock-1, 3 Years</td>
<td>Cauliflower like pedunculated warts (2-4cm) on the back, n = 5</td>
<td>+, Mild</td>
<td>3 Months</td>
<td>Autohemo therapy</td>
</tr>
<tr>
<td>BKU-19</td>
<td>Nov-2009</td>
<td>Asoke Lohar Patrasayer Block Vill-Jagatgouritala, Birsingha</td>
<td>ND Cattle-3</td>
<td>ND Young bull-2.5 years</td>
<td>Multiple dome shaped pedunculated warts (1-2.5) on fore limbs, n = 20</td>
<td>++++, Moderate</td>
<td>6 Months</td>
<td>Thuja 200X by S/C route</td>
</tr>
<tr>
<td>BKU-20</td>
<td>Nov-2009</td>
<td>Biswanath Singh Patrasayer Block Vill-Patrasayer</td>
<td>CBJ Cattle-6</td>
<td>CBJ COW-1, 3 Years</td>
<td>Numerous rice grain type of warts (1-1.5cm) on teats, n = 20</td>
<td>++++, Moderate</td>
<td>6 Months</td>
<td>Thuja 200X by S/C route</td>
</tr>
<tr>
<td>BKU-21</td>
<td>Nov-2009</td>
<td>Paban Mondal Patrasayer Block Vill-Ban Birsingha</td>
<td>ND Cattle6, Buffalo-6</td>
<td>One Murrah buffalo, 6 months</td>
<td>Numerous rice grain type of warts (0.5-1 cm) on teats andudder, n&gt;30</td>
<td>++++, Severe</td>
<td>4 Months</td>
<td>Autohemo therapy</td>
</tr>
<tr>
<td>BKU-22</td>
<td>Nov-2009</td>
<td>Tarapada Ghosh Patrasayer Block; Vill-Venda</td>
<td>ND Cattle-6, Buffalo-2</td>
<td>ND Young bulb-2.5 years</td>
<td>Diffuse round to oval shaped, hard, horny pedunculated warts (2-3cm) on face, neck and left fore limb, n = 8</td>
<td>+, Mild</td>
<td>3 Months</td>
<td>Autohemo therapy</td>
</tr>
<tr>
<td>BKU-23</td>
<td>Nov-2009</td>
<td>Kapil Dari Patrasayer Block Vill-Krishnagar</td>
<td>Buffalo-12</td>
<td>One indigenous she buffalo, 4 years</td>
<td>Numerous rice grain type of warts (1-1.5cm) on teats, n = 20</td>
<td>++++, Moderate</td>
<td>3 Months</td>
<td>Thuja 200X by S/C route</td>
</tr>
<tr>
<td>BKU-24</td>
<td>Oct-2010</td>
<td>Ahari Bagdi Indas Block Vill-Hat Nagar</td>
<td>CBJ Cattle-4</td>
<td>CBJ Heifer-1, 2 years</td>
<td>Diffuse round to oval shaped, hard, horny pedunculated warts (2-2.5cm) on head, neck and fore limbs, n&gt;50</td>
<td>++++, Severe</td>
<td>6 Months</td>
<td>Autohemo therapy</td>
</tr>
<tr>
<td>BKU-25</td>
<td>Oct-2010</td>
<td>Seikh Alo Indas Block Vill-Hat Nagar</td>
<td>Buffalo-2, CBJ Cattle-4</td>
<td>CBJ Heifer-1, 2 years</td>
<td>Numerous cauliflower like stalked growths (2-3.5cm) on limbs and back, n=60</td>
<td>++++, Severe</td>
<td>6 months</td>
<td>Ivermectin orally tried</td>
</tr>
<tr>
<td>BKU-26</td>
<td>Oct-2010</td>
<td>Sk Siraj Patrasayer Block Vill-Naldanga</td>
<td>CBJ Cattle-6</td>
<td>CBJ Heifer-1, 2 years</td>
<td>Cauliflower like pedunculated warts (2-3cm) Solely on neck, n = 5</td>
<td>+, Mild</td>
<td>3 Months</td>
<td>Ivermectin orally tried</td>
</tr>
<tr>
<td>BKU-27</td>
<td>Oct-2010</td>
<td>Kalo Bagdi Patrasayer Block Vill-Beur</td>
<td>Cattle-4</td>
<td>ND MC-1, 1 Year</td>
<td>Flat, round non pedunculated warts (1-2cm) on cheeks, n = 6</td>
<td>+, Mild</td>
<td>3 Months</td>
<td>Ivermectin orally tried</td>
</tr>
<tr>
<td>BKU-28</td>
<td>Oct-2010</td>
<td>Laxmi Bagdi Patrasayer Block Vill-Betur</td>
<td>Cattle-3</td>
<td>CBJ Heifer-1, 2 years</td>
<td>Dome shaped pedunculated warts (2-3 cm) on face and limbs, n = 9</td>
<td>+, Mild</td>
<td>6 Months</td>
<td>Thuja 200X by S/C route</td>
</tr>
<tr>
<td>BKU-29</td>
<td>Oct-2010</td>
<td>Sukanta Khan Patrasayer Block</td>
<td>ND Cattle-4</td>
<td>ND MC-1, 1 Year</td>
<td>Squat type warts (3-4 cm) on both sides of the neck, n = 60</td>
<td>+, Mild</td>
<td>3 Months</td>
<td>Thuja 200X by S/C route</td>
</tr>
<tr>
<td>Vill-Mahespur</td>
<td>BKU-30</td>
<td>Oct-2010</td>
<td>Himangshu Dutta Patrasayer Block Vill-Krishnanagar</td>
<td>CBJ Cattle-5, Buffalo-2</td>
<td>CBJ Heifer-1, 2 years</td>
<td>Whole body papillomatosis with dense vegetative pedunculated outgrowths (1-5cm), n = 65</td>
<td>++++, Severe</td>
<td>5 Months</td>
</tr>
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</tr>
<tr>
<td></td>
<td>BKU-31</td>
<td>Jan-2011</td>
<td>Panchu Gopal Dutta, Patrasayer Block; Vill-Venda</td>
<td>CBJ Cattle-5, Buffalo-2</td>
<td>CBJ Heifer-1, 2 years</td>
<td>Few nodular warts (1-2cm) around eyes and upper eye lids, n = 7</td>
<td>+, Mild</td>
<td>3 Months</td>
</tr>
<tr>
<td></td>
<td>BKU-32</td>
<td>Jan-2011</td>
<td>Labad Bauri NetraKhanda, Patrasayer Block</td>
<td>Buffalo-2, ND Cattle-4</td>
<td>ND MC-1, 1 Year</td>
<td>Flat, round non pedunculated warts (1-2cm) on cheeks and ears, n = 9</td>
<td>+, Mild</td>
<td>3 Months</td>
</tr>
<tr>
<td></td>
<td>BKU-33</td>
<td>Jan-2011</td>
<td>Subodh Bari Muktapur, Patrasayer Block</td>
<td>Buffalo-2, CBJ Cattle-4</td>
<td>CBJ Heifer-1, 2 years</td>
<td>Magnified pedunculated warts (2-3cm) on upper fore limbs, back and abdomen, n = 55</td>
<td>++++, Severe</td>
<td>5 Months</td>
</tr>
<tr>
<td></td>
<td>BKU-34</td>
<td>Jan-2011</td>
<td>Dilip Halder Muktapur, Patrasayer Block</td>
<td>Buffalo-2, ND Cattle-4</td>
<td>ND MC-1, 1 Year</td>
<td>Hard horny pedunculated warts (1-2cm) on ears, n = 6</td>
<td>+, Mild</td>
<td>3 Months</td>
</tr>
<tr>
<td></td>
<td>BKU-35</td>
<td>Jan-2011</td>
<td>Bablu Das Muktapur, Patrasayer Block</td>
<td>Buffalo-5, ND Cattle-6</td>
<td>One indigenous water buffalo bullock, 4 years</td>
<td>Multiple cauliflower like pedunculated warts (2-3cm) on head, back and wither, n = 23</td>
<td>++++, Moderate</td>
<td>6 Months</td>
</tr>
<tr>
<td></td>
<td>BKU-36 &amp; 37</td>
<td>Jan-2011</td>
<td>Nirapada Khanra Muktapur, Patrasayer Block</td>
<td>Buffalo-6, ND Cattle-4</td>
<td>Two indigenous water buffalo bullocks, 4-5 Years respectively</td>
<td>Multiple non pedunculated warts (1-3cm) on neck and fore limbs; and stalked warts at perianal and perivulval region, n = 20 &amp; 24 respectively</td>
<td>++++, Moderate</td>
<td>3 Months</td>
</tr>
<tr>
<td></td>
<td>BKU-38</td>
<td>Jan-2011</td>
<td>Gadadhur Ghosh Muktapur, Patrasayer Block</td>
<td>ND Cattle-5</td>
<td>ND MC-1, 10 Months</td>
<td>Small nodular non pedunculated warts (1-1.5cm) on back, n = 7</td>
<td>+, Mild</td>
<td>3 Months</td>
</tr>
<tr>
<td></td>
<td>BKU-39</td>
<td>Jan-2011</td>
<td>Bijoy Karak MamudPur, Patrasayer Block</td>
<td>ND Cattle-6</td>
<td>ND Heifer-1, 1.6 year</td>
<td>Small nodular non pedunculated warts on (0.5cm-1cm) back and belly, n=4</td>
<td>+, Mild</td>
<td>6 Months</td>
</tr>
<tr>
<td></td>
<td>BKU-40</td>
<td>Jan-2011</td>
<td>Subhas Mondal MamudPur, Patrasayer Block</td>
<td>ND Cattle-4</td>
<td>Gir MC-1, 10 Months</td>
<td>Small nodular pedunculated warts (1-2.5cm) on back and axilla, n = 9</td>
<td>+, Mild</td>
<td>3 Months</td>
</tr>
<tr>
<td></td>
<td>BKU-41</td>
<td>Jan-2011</td>
<td>Nalin Ghosh MamudPur, Patrasayer Block</td>
<td>Buffalo-2, ND Cattle-4</td>
<td>ND Heifer-1, 1.6 year</td>
<td>Multiple cauliflower like pedunculated warts (2-3cm) on head, neck and wither, n = 23</td>
<td>++++, Moderate</td>
<td>6 Months</td>
</tr>
<tr>
<td></td>
<td>BKU-42</td>
<td>Jan-2011</td>
<td>Shibu Mal Padua, Patrasayer Block</td>
<td>ND Cattle-8</td>
<td>ND Heifer-1, 1.6 year</td>
<td>Small (1-2 cm) nodular non pedunculated warts on ears, n = 4</td>
<td>+, Mild</td>
<td>3 Months</td>
</tr>
<tr>
<td></td>
<td>BKU-43</td>
<td>Jan-2011</td>
<td>Badal Bag Borobandhi, Patrasayer Block</td>
<td>Buffalo-2, ND Cattle-4</td>
<td>ND MC-1, 10 Months</td>
<td>Small cauliflower like pedunculated warts (2-3 cm) on back, belly and axilla, n = 23</td>
<td>++++, Moderate</td>
<td>3 Months</td>
</tr>
<tr>
<td></td>
<td>BKU-44</td>
<td>Jan-2011</td>
<td>Amiya Nag Patrasayer, Bankura</td>
<td>CBJ Cattle-6</td>
<td>CBJ Cow-1, 3 years</td>
<td>Sessile type warts (4-5 cm) on both sides of the neck, n = 7</td>
<td>+, Mild</td>
<td>6 Months</td>
</tr>
<tr>
<td></td>
<td>BKU-45</td>
<td>Jan-2011</td>
<td>Dharani Bagdi Bijpur, Patrasayer</td>
<td>ND Cattle-8</td>
<td>ND MC-1, 10 Months</td>
<td>Numerous small (1-2 cm) conical pedunculated</td>
<td>++++, Moderate</td>
<td>4 Months</td>
</tr>
<tr>
<td>Block</td>
<td>Date</td>
<td>Source</td>
<td>Age</td>
<td>Description</td>
<td>Grade</td>
<td>Duration</td>
<td>Treatment</td>
<td></td>
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<tr>
<td>Becha Ghosh Bijapur, Patrasayer Block</td>
<td>Jan-2011</td>
<td>ND Cattle-6</td>
<td>ND Heifer-1, 2 years</td>
<td>Multiple (n = 24) flat type elevated pedunculated warts (3-4 cm) on ventral abdomen</td>
<td>++++, Moderate</td>
<td>4 Months</td>
<td>Thuja orally tried</td>
<td></td>
</tr>
<tr>
<td>Vivekananda Ghosh Bijapur, Patrasayer Block</td>
<td>Jan-2011</td>
<td>CBJ Cattle-4</td>
<td>CBJ HF-1, 1.5 Years</td>
<td>Multiple pedunculated warts (2-3 cm) as if bunch of grapes on right neck and interscapular region, n = 28</td>
<td>++++, Moderate</td>
<td>5 Months</td>
<td>Ivermectin tried</td>
<td></td>
</tr>
<tr>
<td>Dilip Bagdi Bijapur, Patrasayer Block</td>
<td>Jan-2011</td>
<td>Cattle-2</td>
<td>ND Heifer-1, 1.6 years</td>
<td>Multiple (n = 20) dome shaped non pedunculated warts (2-3 cm) on ear, eyes and dewlap</td>
<td>++++, Moderate</td>
<td>6 months</td>
<td>Thuja orally tried</td>
<td></td>
</tr>
<tr>
<td>Narugopal Patra Hamirpur, Patrasayer Block</td>
<td>Jan-2011</td>
<td>Buffalo-2, Cattle-4</td>
<td>CBH HF-1, 1.5 Years</td>
<td>Numerous small conical solid pedunculated warts (1-3 cm) on lower hind limbs, n = 32</td>
<td>++++, Moderate</td>
<td>5 Months</td>
<td>Thuja orally tried</td>
<td></td>
</tr>
<tr>
<td>Murari Ghosh Hamirpur, Patrasayer Block</td>
<td>Jan-2011</td>
<td>Buffalo-2, CBJ Cattle-4</td>
<td>CBH HF-1, 2.5 Years</td>
<td>Flat, round horny non pedunculated warts (2-4 cm) on neck and inter scapular region, n = 24</td>
<td>++++, Moderate</td>
<td>3 Months</td>
<td>Ivermectin orally tried</td>
<td></td>
</tr>
<tr>
<td>Jagannath Murmu Rollnagar, Patrasayer Block</td>
<td>Jan-2011</td>
<td>CBJ Cattle-5</td>
<td>CBJ HF-1, 3.5 Years</td>
<td>Para-genital pedunculated warts (3-4 cm) around the vulva, n = 12</td>
<td>++++, Moderate</td>
<td>4 Months</td>
<td>Ivermectin orally tried</td>
<td></td>
</tr>
<tr>
<td>Sk. Hasu Bamunpuku, Patrasayer Block</td>
<td>Jan-2011</td>
<td>CBJ Cattle-6</td>
<td>CBH HF-1, 1.5 Years</td>
<td>Nodular non pedunculated warts (2-3 cm) around the anus, n = 16</td>
<td>++++, Moderate</td>
<td>5 months</td>
<td>Thuja orally tried</td>
<td></td>
</tr>
<tr>
<td>Madhu Hajra Krishnanagar, Patrasayer Block</td>
<td>Jan-2011</td>
<td>ND Cattle-5</td>
<td>Indigenous cow-1, 4 years</td>
<td>Tag type warts (1-2 cm) on neck, n = 5</td>
<td>+, Mild</td>
<td>3 Months</td>
<td>Ivermectin orally tried</td>
<td></td>
</tr>
<tr>
<td>Tapan Ghosh Deuli, Patrasayer Block</td>
<td>Jan-2011</td>
<td>CBJ Cattle-3</td>
<td>CBJ Cow-1, 4 years</td>
<td>Single dome shaped non pedunculated wart (3 cm) on left ear base</td>
<td>+, Mild</td>
<td>3 Months</td>
<td>Thuja orally tried</td>
<td></td>
</tr>
<tr>
<td>Shyamal Biswas Parulia, Patrasayer Block</td>
<td>Jan-2011</td>
<td>ND Cattle-6</td>
<td>ND HF-1, 2 Years</td>
<td>Multiple conical pedunculated warts (2-3 cm) on face, neck and thorax, n = 21</td>
<td>++++, Moderate</td>
<td>3 Months</td>
<td>Oral Ivermectin tried</td>
<td></td>
</tr>
<tr>
<td>Tapas Pramanik Parulia, Patrasayer Block</td>
<td>Jan-2011</td>
<td>CBJ Cattle-5</td>
<td>CBJ FC-1, 10 Months</td>
<td>Single flat type non pedunculated wart (3cm) on barrel</td>
<td>+, Mild</td>
<td>5 months</td>
<td>Anthiomaline tried</td>
<td></td>
</tr>
<tr>
<td>Nepal Bari Dhagaria, Patrasayer Block</td>
<td>Jan-2011</td>
<td>Buffalo = 7, ND Cattle-4</td>
<td>She buffalo-1, 5 years</td>
<td>Numerous small nodular pedunculated warts (1-1.5cm) on face, neck and back, n = 23</td>
<td>++++, Moderate</td>
<td>5 months</td>
<td>Ivermectin tried</td>
<td></td>
</tr>
<tr>
<td>Sadhan Bari Dhagaria, Patrasayer Block</td>
<td>Jan-2011</td>
<td>Buffalo = 5, CBJ Cattle-4</td>
<td>CBJ FC-1, 10 Months</td>
<td>Single dome shaped non pedunculated wart on neck (2cm)</td>
<td>+, Mild</td>
<td>5 months</td>
<td>Anthiomaline tried</td>
<td></td>
</tr>
<tr>
<td>Sk Siraj Dahagaria, Patrasayer Block</td>
<td>Jan-2011</td>
<td>CBJ Cattle-5</td>
<td>CBJ FC-1, 10 Months</td>
<td>Single dome shaped non pedunculated wart on left ear (3cm)</td>
<td>+, Mild</td>
<td>3 months</td>
<td>Thuja orally tried</td>
<td></td>
</tr>
<tr>
<td>Tarapada Ghosh Kantabon, Patrasayer Block</td>
<td>Jan-2011</td>
<td>ND Cattle-6</td>
<td>ND HF-1, 2 Years</td>
<td>Single dome shaped non pedunculated wart (3 cm) on neck</td>
<td>+, Mild</td>
<td>3 Months</td>
<td>Thuja orally tried</td>
<td></td>
</tr>
<tr>
<td>Himansu Dutta</td>
<td>Jan-2011</td>
<td>CBJ Cattle-5</td>
<td>CBJ FC-1, 10 Months</td>
<td>Multiple conical pedunculated warts (2-3cm) on</td>
<td>++++, Moderate</td>
<td>4 Months</td>
<td>Thuja orally tried</td>
<td></td>
</tr>
<tr>
<td>Case</td>
<td>Date</td>
<td>Owner</td>
<td>Age of Animal</td>
<td>Age of Cattle</td>
<td>Reaction</td>
<td>Response</td>
<td></td>
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<tr>
<td>BCU-62</td>
<td>Jan-2011</td>
<td>Kantabon, Patrasayer Block</td>
<td>Rasu Bagdi Kshley Para, Krishnanagar, Patrasayer Block</td>
<td>ND Cattle-5</td>
<td>ND HF-1, 2 Years</td>
<td>Hard, horny pedunculated warts (2-2.5cm) on head, neck and right fore leg, n = 23</td>
<td>++++, Moderate</td>
<td>6 Months</td>
</tr>
<tr>
<td>BCU-63</td>
<td>Jan-2011</td>
<td>Nani Gopal Ghosh Kesabpur, Patrasayer Block</td>
<td>Nani Bagdi Kesabpur, Patrasayer Block</td>
<td>CBJ Cattle-5</td>
<td>CBJ FC-1, 10 Months</td>
<td>Multiple spherical non pedunculated warts (1-2cm) on fore limbs, n = 20</td>
<td>++++, Moderate</td>
<td>5 months</td>
</tr>
<tr>
<td>BCU-64</td>
<td>Jan-2011</td>
<td>Shib Shankar Talukder Panchpara, Patrasayer Block</td>
<td>Shib Shankar Talukder Panchpara, Patrasayer Block</td>
<td>CBJ Cattle-7</td>
<td>CBJ Cow-1, 3 Years</td>
<td>Hard, horny pedunculated warts (2-3cm) on head, neck and right fore leg below the knee region, n = 20</td>
<td>++++, Moderate</td>
<td>5 months</td>
</tr>
<tr>
<td>BCU-65</td>
<td>Jan-2011</td>
<td>Ashoke Nandy Beur, Patrasayer Block</td>
<td>Ashoke Nandy Beur, Patrasayer Block</td>
<td>CBJ Cattle-4, ND-3</td>
<td>ND HF-1, 2 Years</td>
<td>Multiple conical pedunculated warts (1-2cm) on head, face, neck and thorax, n = 25</td>
<td>++++, Moderate</td>
<td>4 months</td>
</tr>
<tr>
<td>BCU-66</td>
<td>Jan-2011</td>
<td>Sukumar Shyam Habpukur, Patrasayer Block</td>
<td>Sukumar Shyam Habpukur, Patrasayer Block</td>
<td>ND Cattle-8</td>
<td>ND HF-1, 2 Years</td>
<td>Multicentric, non pedunculated papulonodules (2-4cm) on face, neck, fore limbs and barrel, maggotted, n = 54</td>
<td>++++, Severe</td>
<td>6 Months</td>
</tr>
<tr>
<td>BCU-67</td>
<td>Jan-2011</td>
<td>Samanta Das Khamardhi, Patrasayer Block</td>
<td>Samanta Das Khamardhi, Patrasayer Block</td>
<td>CBJ Cattle-7</td>
<td>CBJ Cow-1, 3.5 Years</td>
<td>Hard, horny pedunculated warts (2-3cm) on head, neck and right fore limb above the knee, n = 23</td>
<td>++++, Moderate</td>
<td>4 Months</td>
</tr>
<tr>
<td>BCU-68</td>
<td>Jan-2011</td>
<td>Lakshman Sing Maheshpur, Patrasayer Block</td>
<td>Lakshman Sing Maheshpur, Patrasayer Block</td>
<td>CBJ Cattle-7</td>
<td>CBJ Cow-1, 3.5 Years</td>
<td>Multiple conical non pedunculated warts (1-1.5cm) on face, neck and thorax, n = 21</td>
<td>++++, Moderate</td>
<td>4 Months</td>
</tr>
<tr>
<td>BCU-69</td>
<td>March-2012</td>
<td>Hardam Khan Ranisayer, Patrasayer Block</td>
<td>Hardam Khan Ranisayer, Patrasayer Block</td>
<td>CBJ Cattle-7</td>
<td>CBJ FC-1, 10 Months</td>
<td>Multiple maggotted and bloody, pedunculated warts (2-4cm) on fore limbs, n = 23</td>
<td>++++, Severe</td>
<td>4 Months</td>
</tr>
<tr>
<td>BCU-70</td>
<td>March-2012</td>
<td>Rased Mallick Srikara, Indas Block</td>
<td>Rased Mallick Srikara, Indas Block</td>
<td>ND Cattle-7</td>
<td>ND HF-1, 2 Years</td>
<td>One large cutaneous pedunculated wart (5cm) on the right side above the eye</td>
<td>+, Mild</td>
<td>5 Months</td>
</tr>
<tr>
<td>BCU-71</td>
<td>March-2012</td>
<td>Sona Bagdi Srikara, Indas Block</td>
<td>Sona Bagdi Srikara, Indas Block</td>
<td>ND Cattle-3</td>
<td>ND HF-1, 2 Years</td>
<td>Multiple, pedunculated warts (2-3cm) on neck and muzzle, n = 12</td>
<td>++++, Moderate</td>
<td>5 Months</td>
</tr>
<tr>
<td>BCU-72</td>
<td>March-2012</td>
<td>Kartick Bagdi Srikara, Indas Block</td>
<td>Kartick Bagdi Srikara, Indas Block</td>
<td>ND Cattle-4</td>
<td>CBJ FC-1, 10 Months</td>
<td>Cauliflower-like pedunculated warts (1-2cm) were present ears, eyelid and neck</td>
<td>++++, Moderate</td>
<td>5 Months</td>
</tr>
<tr>
<td>BCU-73</td>
<td>March-2012</td>
<td>Lalu Shit Maheshpur, Patrasayer Block</td>
<td>Lalu Shit Maheshpur, Patrasayer Block</td>
<td>ND Cattle-2</td>
<td>ND HF-1, 2 Years</td>
<td>Multiple dome shaped non pedunculated warts (2-2.5cm) were present on head and neck, n = 16</td>
<td>++++, Moderate</td>
<td>5 Months</td>
</tr>
<tr>
<td>BCU-74</td>
<td>March-2012</td>
<td>Swapan Bagdi Katora, Indas Block</td>
<td>Swapan Bagdi Katora, Indas Block</td>
<td>Buffalo-2</td>
<td>Indigenous male Water buffalo calf-1, 11 Months</td>
<td>Multiple Cauliflower like pedunculated warts (2-4cm) on left thigh of hind limb and left axilla, n = 21</td>
<td>++++, Moderate</td>
<td>5 Months</td>
</tr>
<tr>
<td>BCU-75</td>
<td>March-2012</td>
<td>Sannyasi Bagdi Gare Danga, Patrasayer Block</td>
<td>Sannyasi Bagdi Gare Danga, Patrasayer Block</td>
<td>CBJ Cattle-2</td>
<td>CBJ FC-1, 10 Months</td>
<td>Multiple dome shaped pedunculated warts (2-2.5cm) were present on ears, eyelids, neck and trunk, n = 18</td>
<td>++++, Moderate</td>
<td>4 Months</td>
</tr>
<tr>
<td>BKU-76</td>
<td>March-2012</td>
<td>Achinta Pal</td>
<td>CBJ Cattle-4</td>
<td>CBJ Cow-1, 3.5 years</td>
<td>Numerous complicated cauliflower like pedunculated warts (3-4cm) were present on face, eyes and neck region, n&gt;50</td>
<td>++++, Severe</td>
<td>4 Months</td>
<td>Treated by Inj Ivermectin</td>
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<tr>
<td>BKU-77</td>
<td>March-2012</td>
<td>Madhab Bagdi Mishrapukur, Patrasayer Block</td>
<td>ND Cattle-5</td>
<td>ND HF-1, 2 Years</td>
<td>Single squat type wart (1cm) was present on the neck region, n = 1</td>
<td>+, Mild</td>
<td>4 Months</td>
<td>Treated by Inj Ivermectin</td>
</tr>
<tr>
<td>BKU-78</td>
<td>March-2012</td>
<td>Uttam Ghosh, Kankurey, Patrasayer Block</td>
<td>ND Cattle-6</td>
<td>ND HF-1, 2 Years</td>
<td>Multiple sessile type warts (2-2.5cm) were present on face, ears and neck, n = 18</td>
<td>++, Moderate</td>
<td>4 Months</td>
<td>Treated by Inj Ivermectin</td>
</tr>
<tr>
<td>BKU-79</td>
<td>March-2012</td>
<td>Raju Bagdi Krishnanagar, Patrasayer Block</td>
<td>CBJ Cattle-4</td>
<td>CBJ Cow-1, 3.5 years</td>
<td>One small cauliflower like pedunculated wart (1cm) was present on right neck</td>
<td>+, Mild</td>
<td>5 Months</td>
<td>Treated by Thuja orally</td>
</tr>
<tr>
<td>BKU-80</td>
<td>March-2012</td>
<td>Niranjan Bagdi Radhanagar, Balsi-1, Patrasayer Block</td>
<td>ND Cattle-5</td>
<td>ND HF-1, 2 Years</td>
<td>Numerous pedunculated warts (1-2cm) were present on face, neck and body, n = 21</td>
<td>++, Moderate</td>
<td>5 Months</td>
<td>Treated by Thuja orally</td>
</tr>
<tr>
<td>BKU-81</td>
<td>March-2012</td>
<td>Seikh Kajirdanga, Rasulpur, Patrasayer Block</td>
<td>CBJ Cattle-4</td>
<td>CBJ HF-1, 2 Years</td>
<td>Multiple sessile type warts (1-2cm) were present on face, ears and neck, n = 18</td>
<td>++, Moderate</td>
<td>6 Months</td>
<td>Treated by Thuja orally</td>
</tr>
<tr>
<td>BKU-82</td>
<td>March-2012</td>
<td>Sk Nizam Kumrul, Indas Block</td>
<td>ND Cattle-7</td>
<td>NDMC-1,10 Months</td>
<td>Single cauliflower like pedunculated wart (6cm) was present on the neck region, n = 1</td>
<td>+, Mild</td>
<td>5 Months</td>
<td>Treated by Thuja orally</td>
</tr>
<tr>
<td>BKU-83</td>
<td>March-2012</td>
<td>Babar Ali Kumrul, Indas Block</td>
<td>CBJ Cattle-6, Buffalo-5</td>
<td>CBJ HF-1, 2 Years</td>
<td>Multiple sessile warts (1-3cm) were present on face, ears and neck, n = 18</td>
<td>++, Moderate</td>
<td>5 Months</td>
<td>Treated by Thuja orally</td>
</tr>
<tr>
<td>BKU-84</td>
<td>March-2012</td>
<td>Kohinoor Hussain Kumrul, Indas Block</td>
<td>ND Cattle-7, CBJ-5, Buffalo-2</td>
<td>CBJ HF-1, 2 Years</td>
<td>Numerous non pedunculated non pedunculated warts (1-3cm) were present on face, neck and body, n = 21</td>
<td>++, Moderate</td>
<td>5 Months</td>
<td>Treated by Thuja orally</td>
</tr>
<tr>
<td>BKU-85</td>
<td>March-2012</td>
<td>Haran Bagdi Heyat Nagar, Indas Block</td>
<td>ND Cattle-2</td>
<td>NDMC-1,10 Months</td>
<td>Multiple nodular non pedunculated warts (1-2cm) were present on eyelids, ears and neck, n = 9</td>
<td>+, Mild</td>
<td>4 Months</td>
<td>Auto hemotherapy tried</td>
</tr>
<tr>
<td>BKU-86</td>
<td>March-2012</td>
<td>Naseer Mallick Heyat Nagar, Indas Block</td>
<td>ND Cattle-4</td>
<td>ND HF-1, 2 Years</td>
<td>Multiple sessile warts (1-3cm) were present on head, ears and neck, n = 18</td>
<td>++, Moderate</td>
<td>4 Months</td>
<td>Auto hemotherapy tried</td>
</tr>
<tr>
<td>BKU-87</td>
<td>March-2012</td>
<td>Sanatan Bagdi Heyat Nagar, Indas Block</td>
<td>CBJ Cattle-3</td>
<td>CBJ FC-1, 10 Months</td>
<td>Multiple sessile type warts (2-3cm) were present on face, ears and neck, n = 28</td>
<td>++, Moderate</td>
<td>5 Months</td>
<td>Auto hemotherapy tried</td>
</tr>
<tr>
<td>BKU-88</td>
<td>March-2012</td>
<td>Kalo Bagdi Heyat Nagar, Indas Block</td>
<td>ND Cattle-3</td>
<td>ND HF-1, 2 Years</td>
<td>Small (1-2 cm) cauliflower like warts around the eyes, n = 6</td>
<td>+, Mild</td>
<td>5 Months</td>
<td>Auto hemotherapy tried</td>
</tr>
<tr>
<td>BKU-89</td>
<td>March-2012</td>
<td>Bijoy Bagdi Heyat Nagar, Indas Block</td>
<td>ND Cattle-5, Buffalo-2</td>
<td>ND HF-1, 2 Years</td>
<td>Numerous non pedunculated warts (1-3cm) were present on face, neck and body, n&gt;60</td>
<td>++++, Severe</td>
<td>4 Months</td>
<td>Treated by Thuja orally</td>
</tr>
<tr>
<td>BKU-90</td>
<td>March-2012</td>
<td>Alok Bagdi Heyat Nagar, Indas Block</td>
<td>ND Cattle-3</td>
<td>ND HF-1, 2 Years</td>
<td>Numerous non pedunculated warts (1-2cm) were present on face, neck and body, n&gt;50</td>
<td>++++, Severe</td>
<td>5 Months</td>
<td>Treated by Thuja orally</td>
</tr>
<tr>
<td>BKU-91</td>
<td>March-2012</td>
<td>Madhab Bagdi Heyat Nagar, Indas</td>
<td>CBJ Cattle-8</td>
<td>CBJ FC-1, 10 Months</td>
<td>Multiple sessile type warts (1-3cm) were present on</td>
<td>++++, Moderate</td>
<td>5 Months</td>
<td>Treated by Thuja orally</td>
</tr>
<tr>
<td>#</td>
<td>Month</td>
<td>Name</td>
<td>Block</td>
<td>Animal</td>
<td>Breed</td>
<td>Age</td>
<td>Description</td>
<td>Grade</td>
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<tr>
<td>BKY-92</td>
<td>March 2012</td>
<td>Madan Ghosh Amrul, Indas Blogk</td>
<td>ND Cattle-4</td>
<td>ND HF-1, 2 Years</td>
<td>One medium size (3 cm) dome shaped pedunculated warts present on right shoulder, n = 1</td>
<td>+ Mild</td>
<td>4 Months</td>
<td>Treated by Thuja orally</td>
</tr>
<tr>
<td>BKY-93</td>
<td>March 2012</td>
<td>Lakshman Jos Amrul, Indas Blogk</td>
<td>ND Cattle-6</td>
<td>ND HF-1, 2 Years</td>
<td>Medium sized (1-2 cm) conical CWTs were present on head, neck and body, n = 24</td>
<td>+++ Moderate</td>
<td>5 Months</td>
<td>Treated by Thuja orally</td>
</tr>
<tr>
<td>BKY-94</td>
<td>March 2012</td>
<td>Nimai Modak Amrul, Indas Blogk</td>
<td>ND Cattle-7</td>
<td>NDMC-1,10 Months</td>
<td>Multicentre diffuse cauliflower like pedunculated warts (2-3cm) on neck, thorax and belly, n = 22</td>
<td>+++ Moderate</td>
<td>5 Months</td>
<td>Treated by Thuja orally</td>
</tr>
<tr>
<td>BKY-95</td>
<td>March 2012</td>
<td>Bangshi Bagdi Aousnara, Indas Block</td>
<td>CBJ Cattle-6</td>
<td>CBJ HF-1, 2 Years</td>
<td>One small developing non pedunculated papillomatous nodule (0.5cm) on shoulder point, n = 1</td>
<td>+ Mild</td>
<td>5 Months</td>
<td>Treated by Thuja orally</td>
</tr>
<tr>
<td>BKY-96</td>
<td>March 2012</td>
<td>Bablu Ghosh Aousnara, Indas Block</td>
<td>ND Cattle-4</td>
<td>ND HF-1, 2.5 Years</td>
<td>Multiple non pedunculated papillomatous nodules (1-2cm) on back and belly, n = 15</td>
<td>+++ Moderate</td>
<td>4 Months</td>
<td>Treated by Thuja orally</td>
</tr>
<tr>
<td>BKY-97</td>
<td>March 2012</td>
<td>Nimai Nandy Birsingha, Patrasayer Block</td>
<td>CBJ Cattle-4</td>
<td>CBJ HF-1, 1.5 Year</td>
<td>Multiple hard, horny mulberry type pedunculated warts (2-3cm) present on head and face, n = 20</td>
<td>++, Moderate</td>
<td>5 Months</td>
<td>Treated by Thuja orally</td>
</tr>
<tr>
<td>BKY-98</td>
<td>March 2012</td>
<td>Purandar Shu Birsingha, Patrasayer Block</td>
<td>ND Cattle-4</td>
<td>ND HF-1, 2 Years</td>
<td>Multiple non pedunculated papillomatous nodules (1-2cm) on back and belly, n = 18</td>
<td>++, Moderate</td>
<td>5 Months</td>
<td>Treated by Thuja orally</td>
</tr>
<tr>
<td>BKY-99</td>
<td>March 2012</td>
<td>Monimohon Khan, Birsingha, Patrasayer Block</td>
<td>CBJ Cattle-6</td>
<td>CBJ HF-1, 1.5 Year</td>
<td>Multiple non pedunculated papillomatous nodules (1.5-2.5cm) on back and belly, n = 25</td>
<td>++, Moderate</td>
<td>5 Months</td>
<td>Treated by Thuja orally</td>
</tr>
<tr>
<td>BKY-100</td>
<td>March 2012</td>
<td>Chittaranjan Gorai Birsingha, Patrasayer Block</td>
<td>ND Cattle-6</td>
<td>ND HF-1, 2.5 Years</td>
<td>One small developing non pedunculated papillomatous nodule (1cm) on shoulder point, n = 1</td>
<td>+ Mild</td>
<td>4 Months</td>
<td>Treated by Thuja orally</td>
</tr>
<tr>
<td>BKY-101</td>
<td>March 2012</td>
<td>Shibu Karmakar Birsingha, Patrasayer Block</td>
<td>ND Cattle-6</td>
<td>ND FC-1, 10 Months</td>
<td>Small pedunculated warts (1-1.5cm) developed around eyes, neck and fore limbs, n = 9</td>
<td>+ Mild</td>
<td>3 Months</td>
<td>Treated by Thuja orally</td>
</tr>
<tr>
<td>BKY-102</td>
<td>March 2012</td>
<td>Biswanath Hembram Shibkunda, Patrasayer Block</td>
<td>ND Cattle-6</td>
<td>ND FC-1, 10 Months</td>
<td>Multiple non pedunculated, papillomatous nodules (1-2cm) on back and belly, n = 18</td>
<td>++, Moderate</td>
<td>3 Months</td>
<td>Autohemotherapy tried</td>
</tr>
<tr>
<td>BKY-103</td>
<td>March 2012</td>
<td>Ajit Mandy Chandankeyari, Patrasayer Block</td>
<td>Cattle-8</td>
<td>ND HF-1, 1.6 Years</td>
<td>Small pedunculated warts (1.5-2.5cm) developed on trunk, n = 5</td>
<td>+ Mild</td>
<td>3 Months</td>
<td>Autohemotherapy tried</td>
</tr>
<tr>
<td>BKY-104</td>
<td>March 2012</td>
<td>Dibaker Hembram Balirbandh, Patrasayer Block</td>
<td>ND Cattle-5</td>
<td>ND FC-1, 10 Months</td>
<td>Multiple pedunculated papillomatous growths (1-2cm) on neck and legs, n = 12</td>
<td>++, Moderate</td>
<td>6 Months</td>
<td>Autohemotherapy tried</td>
</tr>
<tr>
<td>BKY-105</td>
<td>March 2012</td>
<td>Swarup Dutta Habibpuskarini, Patrasayer Block</td>
<td>ND Cattle-8</td>
<td>ND Cow-1, 3 years</td>
<td>Cauliflower-like pedunculated warts (2-3cm) on hip, tail base and perinealvalarea, n = 23</td>
<td>++, Moderate</td>
<td>4 Months</td>
<td>Treated by Thuja orally</td>
</tr>
<tr>
<td>BKY-106</td>
<td>March 2012</td>
<td>Tapan Ghosh Bhulukbandi, Patrasayer Block</td>
<td>CBJ Cattle-5</td>
<td>CBJ FC-1, 9 Months</td>
<td>One small developing non pedunculated papillomatous nodule (1cm) on shoulder point, n = 1</td>
<td>+ Mild</td>
<td>3 Months</td>
<td>Treated by Inj Anthoemaline</td>
</tr>
<tr>
<td>BKY-107</td>
<td>March 2012</td>
<td>Baidyanath Dey Bankisol,</td>
<td>ND Cattle-8</td>
<td>ND Cow-1, 3 years</td>
<td>Varying size (1-3cm) multiple cauliflower like</td>
<td>++, Moderate</td>
<td>6 Months</td>
<td>Treated by Inj</td>
</tr>
</tbody>
</table>

**Results**
<table>
<thead>
<tr>
<th>Date</th>
<th>Block</th>
<th>Number</th>
<th>Type of Affection</th>
<th>Size</th>
<th>Grade</th>
<th>Treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td>March-2012</td>
<td>Patrasayer</td>
<td>85</td>
<td>Pedunculated warts below the eyes, n = 18</td>
<td></td>
<td>++++</td>
<td>Treated by Inj Antheomaline</td>
</tr>
<tr>
<td>March-2012</td>
<td>BKU-108</td>
<td>108</td>
<td>Varying sized multiple club shaped pedunculated warts below the eyes, n = 15 (size 1-2cm)</td>
<td></td>
<td>Moderate</td>
<td>Inj Antheomaline</td>
</tr>
<tr>
<td>March-2012</td>
<td>BKU-109</td>
<td>109</td>
<td>Multiple cauliflower like pedunculated complicated warts on hind limbs below hock (2-3.5cm), n = 25</td>
<td></td>
<td>++++</td>
<td>Treated by Inj Antheomaline</td>
</tr>
<tr>
<td>March-2012</td>
<td>BKU-110</td>
<td>110</td>
<td>Small thorny tag type warts (1.5cm) on neck, n = 8</td>
<td></td>
<td>+</td>
<td>Treated by Inj Antheomaline</td>
</tr>
<tr>
<td>March-2012</td>
<td>BKU-111</td>
<td>111</td>
<td>Varying sized multiple cauliflower like pedunculated warts below the eyes, n = 18 (size 1-3cm)</td>
<td></td>
<td>++++</td>
<td>Treated by Thuja orally</td>
</tr>
<tr>
<td>March-2012</td>
<td>BKU-112</td>
<td>112</td>
<td>Flat, round type non pedunculated complicated warts (1-2cm), whole body affection, n&gt;50</td>
<td></td>
<td>++++</td>
<td>Inj Lithium Antimony Thiomalate tried</td>
</tr>
<tr>
<td>March-2012</td>
<td>BKU-113</td>
<td>113</td>
<td>Filiform warts (1-1.5cm) at the point of elbow, n = 3</td>
<td></td>
<td>+</td>
<td>Treated with Inj Lithium Antimony Thiomalate</td>
</tr>
<tr>
<td>March-2012</td>
<td>BKU-114</td>
<td>114</td>
<td>One small developing non pedunculated, papillomatous nodule (1cm) on shoulder point, n = 1</td>
<td></td>
<td>+</td>
<td>Treated with Inj Lithium Antimony Thiomalate</td>
</tr>
<tr>
<td>March-2012</td>
<td>BKU-115</td>
<td>115</td>
<td>Multiple dome shaped non pedunculated warts (2-3 cm) on neck, fore limbs and belly, n = 24</td>
<td></td>
<td>++++</td>
<td>Thuja orally</td>
</tr>
<tr>
<td>March-2012</td>
<td>BKU-116</td>
<td>116</td>
<td>Numerous cauliflower like pedunculated warts (1-3 cm) on eyes, ears and back, n = 42</td>
<td></td>
<td>++++</td>
<td>Auto hemotherapy</td>
</tr>
<tr>
<td>May-2012</td>
<td>Patrasayer</td>
<td>118</td>
<td>Multiple dome shaped non pedunculated warts (2-3 cm) on hind limbs below the hock joint, n = 23</td>
<td></td>
<td>++++</td>
<td>Thuja orally</td>
</tr>
<tr>
<td>May-2012</td>
<td>BKU-119</td>
<td>119</td>
<td>Multiple squat types of warts (3-4 cm) on hind limbs and axilla, n = 34</td>
<td></td>
<td>++++</td>
<td>Auto hemotherapy</td>
</tr>
<tr>
<td>May-2012</td>
<td>BKU-120</td>
<td>120</td>
<td>Single cauliflower like pedunculated wart (4 cm) on shoulder</td>
<td></td>
<td>+</td>
<td>Thuja orally</td>
</tr>
<tr>
<td>May-2012</td>
<td>BKU-121</td>
<td>121</td>
<td>Cauliflower like pedunculated warts (2-3 cm) on pouch and perivulval region, n = 16</td>
<td></td>
<td>++++</td>
<td>Treated by Inj Ivermectin</td>
</tr>
<tr>
<td>May-2012</td>
<td>BKU-122</td>
<td>122</td>
<td>Multicentric cauliflower like pedunculated warts (1-4 cm) on neck, thorax and belly, n = 18</td>
<td></td>
<td>++++</td>
<td>Treated by Thuja</td>
</tr>
<tr>
<td>May-2012</td>
<td>BKU-123</td>
<td>123</td>
<td>Small (1-2cm) cauliflower-like pedunculated warts on back and belly, n = 21</td>
<td></td>
<td>++++</td>
<td>Treated by Thuja</td>
</tr>
<tr>
<td>BKU-124</td>
<td>May 2012</td>
<td>Prabir Kundu, Kiyadahari, Patrasayer Block</td>
<td>ND Cattle-6</td>
<td>ND BK-1,4 Years</td>
<td>Exophytic wide base non pedunculated warts (2-4cm) on fore limbs and thorax, n = 12</td>
<td>+++, Moderate</td>
</tr>
<tr>
<td>BKU-125</td>
<td>May 2012</td>
<td>Sridhar Gayen, Sahapur, Patrasayer Block</td>
<td>ND Cattle-5</td>
<td>ND MC-1, 12 Months</td>
<td>Dome shaped non pedunculated warts (2-2.5cm) on face, neck and back, n = 18</td>
<td>+++, Moderate</td>
</tr>
<tr>
<td>BKU-126</td>
<td>May 2012</td>
<td>Biswanath Lohar, Natungram, Patrasayer Block</td>
<td>CBJ Cattle-6</td>
<td>CBJ HF-1, 2 Years</td>
<td>Flattened non pedunculated warts (2-3cm) on Rt. flank and hip, n = 21</td>
<td>+++, Moderate</td>
</tr>
<tr>
<td>BKU-127</td>
<td>May 2012</td>
<td>Dhananjoy Majhi, Goatgovindapur, Patrasayer Block</td>
<td>Gir Cattle-6</td>
<td>GirHF-1, 2 Years</td>
<td>Bunch of grapes like non pedunculated warts (2-3cm) on shoulder, neck and ventral abdomen, n = 34</td>
<td>+++, Moderate</td>
</tr>
<tr>
<td>BKU-128</td>
<td>May 2012</td>
<td>Biswanath Barik, Pandua, Patrasayer Block</td>
<td>ND Cattle-6</td>
<td>ND BK-1,4 Years</td>
<td>Big cauliflower-like exophytic pedunculated growths (3-4cm) on left thigh and Rt. Flank, n = 12</td>
<td>+++, Moderate</td>
</tr>
<tr>
<td>BKU-129</td>
<td>May 2012</td>
<td>Joydip Nir, Seoraboni, Patrasayer Block</td>
<td>CBJ Cattle-5</td>
<td>Sub adult CBJ Bull-1, 2 Years</td>
<td>Round, dome shaped non pedunculated warts (1-2 cm) on face, neck and fore limbs, n = 23</td>
<td>+++, Moderate</td>
</tr>
</tbody>
</table>
Table-2: Breed, age group and sex wise synopsis of cutaneous wart (CWT) and teat papilloma (TP) in cattle and buffalo in the district of Bankura

<table>
<thead>
<tr>
<th>Breeds affected</th>
<th>Susceptible animal population in the BP affected herds</th>
<th>Total No. of wart cases</th>
<th>Sex</th>
<th>Age group</th>
<th>No of CWT cases</th>
<th>No of TP cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indigenous and non-descript cattle</td>
<td>464</td>
<td>70</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>F-42 09 30 03 - 42 -</td>
<td>M-28 17- 08 3 - 28 N/A</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cross breed cattle (CBJ)</td>
<td>273</td>
<td>49</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>F-48 14 24 10 - 47 01</td>
<td>M-01 - - 01 - 01 N/A</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pure breed cattle (PJ)</td>
<td>-</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>F - - - - - -</td>
<td>M - - - - - N/A</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cross breed cattle (HLX)</td>
<td>-</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>F - - - - - -</td>
<td>M - - - - -</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Buffalo</td>
<td>83</td>
<td>10</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>F-5 - 02 03 - 02 3</td>
<td>M-5 01 01 03 - 05 -</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Grand Total</td>
<td>820</td>
<td>129</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>F-95 41 66 22 - 125 04</td>
<td>M-34 - - -</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Table-3: Field survey and clinicopathological observations on cutaneous bovine papillomatosis in Birbhum district of West Bengal

<table>
<thead>
<tr>
<th>Sl No</th>
<th>Period of survey</th>
<th>Owners name &amp; address</th>
<th>Species &amp; herd strength</th>
<th>Category of animal</th>
<th>Distribution of wart</th>
<th>Type of wart</th>
<th>No &amp; size</th>
<th>Severity of infection &amp; duration</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>BBM-1</td>
<td>December-2010</td>
<td>Babu Laha, Sarisha, Thupsara GP</td>
<td>Bovine:7 ND Cow-4, CBJ Cow-2, CBJ HF1</td>
<td>CBJ Cow-1, 3 Years</td>
<td>Neck and dewlap</td>
<td>Small cauliflower like pedunculated warts</td>
<td>n = 15, 2-3 cm in diameter</td>
<td>++++, 6 Months</td>
<td>Moderate, Homeopathic remedy (Thuja orally)</td>
</tr>
<tr>
<td>BBM-2</td>
<td>December-2010</td>
<td>Chand Ghosh, Sarisha, Thupsara GP</td>
<td>Bovine:4 ND cow-3, Gir HF-1, Gir FC-1</td>
<td>Gir FC-1, 13 Months</td>
<td>Hind limbs</td>
<td>Round, nodular non pedunculated warts</td>
<td>n = 20, 1-3 cm in diameter</td>
<td>++++, 4 Months</td>
<td>Moderate, Inj. Ivermectin tried</td>
</tr>
<tr>
<td>BBM-3</td>
<td>December-2010</td>
<td>Akshoy Roy, Sarisha, Thupsara GP</td>
<td>Bovine:4 ND cow-3, Gir HF-1, Gir FC-1</td>
<td>Gir HF-1, 2 Years</td>
<td>Hind limbs and ventral abdomen</td>
<td>Flat and round type non pedunculated warts</td>
<td>n = 15, 2-3 cm in diameter</td>
<td>++++, 6 Months</td>
<td>Moderate, Inj. Ivermectin tried</td>
</tr>
<tr>
<td>BBM-4</td>
<td>December-2010</td>
<td>Sridhar Rai, Sarisha, Thupsara GP</td>
<td>Bovine:8 ND Cow-5, ND BK-2, CBJ HF-1</td>
<td>ND BK-1, 5 Years</td>
<td>Anal region and tail base</td>
<td>Cauliflower like pedunculated warts</td>
<td>n = 12, 3-4 cm in diameter</td>
<td>++++, 8 Months</td>
<td>Moderate, Inj. Anthoemaline tried</td>
</tr>
<tr>
<td>BBM-5</td>
<td>December-2010</td>
<td>Bipattaran Laha, Sarisha, Thupsara GP</td>
<td>Bovine:6 ND Cow-2, ND BK-2, CBJ HF-2</td>
<td>CBJ HF-1, 24 Months</td>
<td>Inter scapular region and belly</td>
<td>Hard, horny pedunculated warts</td>
<td>n = 25, 2-3 cm in diameter</td>
<td>++++, 4 Months</td>
<td>Moderate, Left untreated</td>
</tr>
<tr>
<td>BBM-6</td>
<td>December-2010</td>
<td>Ganesh Laha, Sarisha, Thupsara GP</td>
<td>Bovine:4 ND cow-3, Gir HF-1, Gir FC-1</td>
<td>Gir FC-1, 10 Months</td>
<td>Fore limbs and back</td>
<td>Squat type warts</td>
<td>n = 24, 1-2 cm in diameter</td>
<td>++++, 3 Months</td>
<td>Moderate, Inj. Ivermectin tried</td>
</tr>
<tr>
<td>BBM-7</td>
<td>June-2011</td>
<td>Ashoke Ghosh, Sarisha, Thupsara GP</td>
<td>Bovine:6 ND Cow-2, ND BK-2, CBJ MC-2</td>
<td>CBJ MC-1, 13 Months</td>
<td>Around the eyes and ears</td>
<td>Small cauliflower like pedunculated warts</td>
<td>n = 20, 2-3 cm in diameter</td>
<td>++++, 5 Months</td>
<td>Moderate, Autohemotherapy</td>
</tr>
<tr>
<td>BBM-8</td>
<td>June-2011</td>
<td>Babu Ghosh, Sarisha, Thupsara GP</td>
<td>Bovine:5 HLX Cow-3, HLX FC-2, Buffalo-2</td>
<td>HLX Cow, 4 Years</td>
<td>Around the vulva and linea ulba</td>
<td>Low flat smooth surfaced non pedunculated warts</td>
<td>n = 15, 2-3 cm in diameter</td>
<td>++++, 11 Months</td>
<td>Moderate, Inj. Levamisole tried</td>
</tr>
<tr>
<td>BBM-9</td>
<td>June-2011</td>
<td>Naba kumar Ghosh, Sarisha, Thupsara GP</td>
<td>Bovine:5 ND Cow-2, Gir fc-2, Gir HF-1</td>
<td>Gir FC, 10 Months</td>
<td>Fore limbs</td>
<td>Small cauliflower like warts</td>
<td>n = 30, 2-3 cm in diameter</td>
<td>++++, 4 Months</td>
<td>Moderate, Auto - hemotherapy</td>
</tr>
<tr>
<td>BBM-10</td>
<td>June-2011</td>
<td>Ajoy Kumar Roy, Sarisha, Thupsara GP</td>
<td>Bovine:5 ND Cow-3, Gir FC-1, Gir HF-1</td>
<td>Gir HF, 2.5 Years</td>
<td>Head, neck and dewlap</td>
<td>Small, solid, horny cauliflower like warts</td>
<td>n = 15, 1-3 cm in diameter</td>
<td>++++, 8 Months</td>
<td>Moderate, Inj. Levamisole tried</td>
</tr>
<tr>
<td>BBM-11</td>
<td>June-2011</td>
<td>Dinu Mete, Nanagar, Nanoor Block</td>
<td>Bovine:5 ND Cow-2, Gir FC-2, Gir HF-1</td>
<td>Gir HF, 2 Years</td>
<td>Neck, dewlap and thorax</td>
<td>Small club shaped pedunculated warts</td>
<td>n = 18, 2-3 cm in diameter</td>
<td>+++, 5 Months</td>
<td>Moderate, Auto-hemotherapy</td>
</tr>
<tr>
<td>BBM-12</td>
<td>August-2012</td>
<td>Dinu Mete, Nanagar, Nanoor Block</td>
<td>Bovine:7 ND Cow-4, CBJ HF-1 and CBJ FC-2</td>
<td>CBJ FC, 9 Months</td>
<td>Fore limbs and shoulder region</td>
<td>Small sessile type warts</td>
<td>n&gt;25, 1-3 cm in diameter</td>
<td>+++, 3 Months</td>
<td>Moderate, Inj. Levamisole tried</td>
</tr>
<tr>
<td>BBM-13</td>
<td>August-2012</td>
<td>Pulok Mete, Nanagar, Nanoor Block</td>
<td>Bovine:6 ND Cow-3, CBJ BK-2, CBJ HF-1</td>
<td>CBJ Bullock, 4 Years</td>
<td>Neck and back</td>
<td>Small sessile type warts</td>
<td>n = 30, 2-3 cm in diameter</td>
<td>+++, 10 Months</td>
<td>Moderate, Auto-hemotherapy</td>
</tr>
<tr>
<td>BBM-14</td>
<td>August-2012</td>
<td>Uttam Ghosh, Nanagar, Nanoor Block</td>
<td>Bovine:6 ND Cow-3, CBJ BK-2, CBJ HF-1</td>
<td>CBJ Bullock, 4 Years</td>
<td>Murrah she buffalo, 4 years</td>
<td>Hard, horny pedunculated warts</td>
<td>n = 15, 2-3 cm in diameter</td>
<td>+++, 6 Months</td>
<td>Moderate, Auto-hemotherapy</td>
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<tr>
<td>BBM-15</td>
<td>August-2012</td>
<td>College Faider, Jalondi, Nanoor Block</td>
<td>Bovine:6 ND Cow-3, CBJ BK-2, CBJ HF-1</td>
<td>CBJ Bullock, 4 Years</td>
<td>Back and lateral abdomen</td>
<td>Cauliflower like pedunculated warts with wide base</td>
<td>n = 14, 3-4 cm in diameter</td>
<td>+++, 6 Months</td>
<td>Moderate, Inj. Levamisole tried</td>
</tr>
<tr>
<td>BBM-16</td>
<td>August-2012</td>
<td>Shibu Mete, Jalondi, Nanoor Block</td>
<td>Bovine:6 ND Cow-3, CBJ Cow-1, CBJ HF-2</td>
<td>CBJ Cow, 5 years</td>
<td>All four teats</td>
<td>Small filli form type warts</td>
<td>n = 15, 2-3 cm in diameter</td>
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<td>BBM-17</td>
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<td>Anwar SK, Palundi, Nanoor Block</td>
<td>Bovine:5 MB HF-3, Lactating MB-3</td>
<td>Murrah buffalo HF, 3 years</td>
<td>All four teats</td>
<td>Frond type non pedunculated warts</td>
<td>n = 12, 2-3 cm in diameter</td>
<td>+++, 10 Months</td>
<td>Moderate, Inj. Levamisole tried</td>
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<td>Kerim SK, Palundi, Nanoor Block</td>
<td>Bovine:5 CBJ Cow-3, CBJ HF-2</td>
<td>CBJ Cow, 5 years</td>
<td>Teats and udder</td>
<td>Rice grain type</td>
<td>n = 15, 2-3 cm in diameter</td>
<td>+++, 12 Months</td>
<td>Moderate, Auto-hemotherapy</td>
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<tr>
<td>BBM-19</td>
<td>November-2012</td>
<td>Iikai SK, Palundi, Nanoor Block</td>
<td>Bovine:6 ND Cow-4, CBJ Cow-1, CBJ HF-1</td>
<td>CBJ Cow, 5 years</td>
<td>Fore limbs and shoulder region</td>
<td>Round, nodular non pedunculated warts</td>
<td>n = 35, 2-3 cm in diameter</td>
<td>+++, 8 Months</td>
<td>Moderate, Auto-hemotherapy</td>
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<td>BBM-20</td>
<td>November-2012</td>
<td>Tarun Ghosh, Palundi, Nanoor Block</td>
<td>Bovine:7 ND Cow-3, NDHF-2, ND BK-2</td>
<td>ND FC, 9 Months</td>
<td>Neck and back</td>
<td>Big cauliflower like pedunculated warts</td>
<td>n = 8, 2-3 cm in diameter</td>
<td>+++, 6 Months</td>
<td>Mild, Inj. Levamisole tried, surgical cure</td>
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<tr>
<td>BBM-21</td>
<td>November-2012</td>
<td>Provas Mondal, Palundi, Nanoor Block</td>
<td>Bovine:7 ND Cow-3, NDHF-2, ND BK-2</td>
<td>CBJ Bullock, 4 Years</td>
<td>Peri anal region and tail base</td>
<td>Squat type warts</td>
<td>n = 15, 2-3 cm in diameter</td>
<td>+++, 6 Months</td>
<td>Moderate, Auto-hemotherapy</td>
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<td>BBM-22</td>
<td>November-2012</td>
<td>Geni Chowdhury, Adhkuley, Nanoor Block</td>
<td>Bovine:6 ND Cow-3, CBJ BK-2, CBJ HF-1</td>
<td>CBJ Bullock, 4 Years</td>
<td>Back and lateral abdomen</td>
<td>Hard, horny pedunculated warts</td>
<td>n = 15, 2-3 cm in diameter</td>
<td>+++, 6 Months</td>
<td>Moderate, Inj. Levamisole tried</td>
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<td>BBM-23</td>
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<td>Durja Mete, Adhkuley, Nanoor Block</td>
<td>Bovine:7 ND Cow-4, CBJ BK-2, CBJ HF-1</td>
<td>CBJ Bullock, 4 Years</td>
<td>Inguinal region</td>
<td>Round, nodular warts</td>
<td>n = 14, 1-2 cm in diameter</td>
<td>+++, 4 Months</td>
<td>Moderate, Auto-hemotherapy</td>
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Results | 89
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<th>Animal Category</th>
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<th>Location Specifics</th>
<th>Lesion Type</th>
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<td>Sukumar Gorai, Adhkuley, Nanoor Block</td>
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<td>CBJ Cow, 5 years</td>
<td>Teats only</td>
<td>Rice grain type</td>
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<td>Rentu SK, Adhkuley, Nanoor Block</td>
<td>Bovine:7</td>
<td>ND Cow-3, NDHF-2, ND BK-2</td>
<td>ND Bullock, 4 Years</td>
<td>Neck region</td>
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<td>n=25, 2-3 cm in diameter</td>
<td>+++, 6 Months</td>
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<td>Bikash Gorai, Nouda, Nanoor Block</td>
<td>Bovine:6</td>
<td>ND Cow-4, ND FC-2</td>
<td>ND FC, 9 Months</td>
<td>Hind limbs</td>
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<td>Sandiya Mete, Nouda, Nanoor Block</td>
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<td>She buffalo-2, HF-2</td>
<td>Surti She Buffalo, 6 Years</td>
<td>All four teats</td>
<td>Rice grain type</td>
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<td>ND Cow-3, NDHF-2, ND BK-2</td>
<td>ND Bullock, 4 Years</td>
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<td>Teats only</td>
<td>Squat type warts</td>
<td>n=12, 1-2 cm in diameter</td>
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<td>BBM-31</td>
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<td>Khaireul SK, Na-Nagar Danga, Nanoor Block</td>
<td>Bovine:6</td>
<td>ND Cow-4, ND FC-2</td>
<td>ND FC, 9 Months</td>
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<td>n=18, 1-3 cm in diameter</td>
<td>+++, 3 Months</td>
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<td>BBM-32</td>
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<td>Kalo SK, Na-Nagardanga, Nanoor Block</td>
<td>Bovine:6</td>
<td>ND Cow-3, Gir HF-2, Gir MC-1</td>
<td>Gir HF, 2 Years</td>
<td>Fore limbs</td>
<td>Round, nodular warts</td>
<td>n=25, 2-3 cm in diameter</td>
<td>+++, 6 Months</td>
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<td>BBM-33</td>
<td>December-2012</td>
<td>Montu SK, Na-Nagardanga, Nanoor Block</td>
<td>Bovine:6</td>
<td>ND Cow-3, Gir HF-2, Gir MC-1</td>
<td>Gir HF, 2 Years</td>
<td>Muzzle, cheek, eyes and ear pinna</td>
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<td>BBM-34</td>
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<td>Samir Ghosh, Chatim Gram, Nanoor Block</td>
<td>Bovine:5</td>
<td>ND Cow-2, CBJ FC-2, CBJ Cow-1</td>
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<td>Neck region</td>
<td>Round, nodular non pedunculated warts</td>
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<td>BBM-35</td>
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<td>Hafiz SK, Chatim Gram, Nanoor Block</td>
<td>Bovine:5, ND Cow-2, CBJ BK-2, ND HF-1</td>
<td>CBJ Bullock, 4 Years</td>
<td>Inter scapular region</td>
<td>Big cauliflower like warts</td>
<td>n=8, 4-5 cm in diameter</td>
<td>+, 6 Months</td>
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<tr>
<td>BBM-36</td>
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<td>Tulu SK, Chatim Gram, Nanoor Block</td>
<td>Bubaline:5</td>
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<td>Murrah she buffalo, 4 years</td>
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<td>Squat type warts</td>
<td>n=14, 2-3 cm in diameter</td>
<td>+++, 7 Months</td>
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<td>BBM-37</td>
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<td>Bovine:6</td>
<td>ND Bullock, 3.5 Years</td>
<td>Head and shoulder</td>
<td>Wide base non</td>
<td></td>
<td>n=15, 2-3 cm in diameter</td>
<td>+++, 6 Months</td>
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<td>Gram, Nanoor Block</td>
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<td>Pedunculated papilloma</td>
<td>Diameter</td>
<td>Levamisole tried</td>
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<td>Gopal Ghosh, Chatim Gram, Nanoor Block</td>
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<td>Mammary gland</td>
<td>Rice grain type</td>
<td>n = 8, 1-2 cm in diameter</td>
<td>++++, 6 Months</td>
<td>Mild, low grade infection, Thuja orally</td>
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<td>Dayamoy Ghosh, Goalpara, Nanoor Block</td>
<td>Gir HF, 2 Years</td>
<td>Ventral abdomen</td>
<td>Round, nodular non pedunculated warts</td>
<td>n = 15, 2-3 cm in diameter</td>
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<td>Moderate, Inj. Levamisole tried</td>
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<tr>
<td>Basanta Ghosh, Goalpara, Nanoor Block</td>
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<td>Head and shoulder</td>
<td>Big cauliflower like pedunculated warts</td>
<td>n = 18, 3-5 cm in diameter</td>
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<td>Moderate, Autohemotherapy</td>
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<td>Bijan Pal, Goalpara, Nanoor Block</td>
<td>Gir HF, 2 Years</td>
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<td>Hard, horny pedunculated warts</td>
<td>n = 8, 2-3 cm in diameter</td>
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<td>Mild, low grade infection, Thuja orally</td>
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<td>Amar Dey, Santra, Nanoor Block</td>
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<td>n = 20, 3-4 cm in diameter</td>
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<td>Gayaram Ghosh, Santra, Nanoor Block</td>
<td>Gir HF, 2.5 Years</td>
<td>Fore limbs and shoulder region</td>
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<td>n = 20, 3-4 cm in diameter</td>
<td>++++, 6 Months</td>
<td>Moderate, Inj. Anthiomaline tried</td>
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**Results**
Table-4: Breed, age group and sex wise synopsis of cutaneous wart (CWT) and teat papilloma (TP) in cattle and buffalo in Birbhum District of WB

<table>
<thead>
<tr>
<th>Breeds affected</th>
<th>Susceptible animal population in the affected herds</th>
<th>Total No. of clinical wart cases</th>
<th>Sex</th>
<th>Age group</th>
<th>No of CWT cases</th>
<th>No of TP cases</th>
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<td>46</td>
<td>M-13</td>
<td>Calf hood</td>
<td>11</td>
<td>37</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>F-33</td>
<td>Sub-adult</td>
<td>12</td>
<td>-</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Adult</td>
<td>23</td>
<td>-</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Old</td>
<td>-</td>
<td>9</td>
</tr>
</tbody>
</table>
Table-5: Field survey and clinicopathological observations on cutaneous bovine papillomatosis in Burdwan District of West Bengal

<table>
<thead>
<tr>
<th>Sl No</th>
<th>Month of survey &amp; year</th>
<th>Ownersname &amp; address</th>
<th>Species &amp; herdstrength</th>
<th>Breedage &amp; sex</th>
<th>Location</th>
<th>Type of wart</th>
<th>No &amp; size</th>
<th>Severity of infection &amp; duration</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>BDN-1</td>
<td>Feb’2010</td>
<td>Rabindra Nath Dutta Akalpoush Kalna-2 Block Burdwan</td>
<td>Bovine:8 CBJ-4 ND -4</td>
<td>CBJ HF-1,2 Years</td>
<td>Both sides of the neck</td>
<td>Cauliflower-like, pedunculated warts</td>
<td>n = 9, 2-4 cm</td>
<td>+, 4 Months</td>
<td>Mild, Thuja (mother tincture) orally</td>
</tr>
<tr>
<td>BDN-2</td>
<td>Feb’2010</td>
<td>Ashok Ghosh Akalpoush Kalna-2 Block Burdwan</td>
<td>Bovine:6 ND-4 Gir-2</td>
<td>ND HF-1, 2 years</td>
<td>Head, face and neck</td>
<td>Round, dome shaped non pedunculated type</td>
<td>n = 10, 1-2 cm</td>
<td>+, 6 Months</td>
<td>Mild, surgical cure</td>
</tr>
<tr>
<td>BDN-3</td>
<td>Feb’2010</td>
<td>Tapas Bera Baidyapur Kalna-2 Block Burdwan</td>
<td>Bovine:12 ND-8 Gir-4</td>
<td>ND MC-1, 10 Months</td>
<td>Peri-orbital region and lower right eye lid</td>
<td>Cauliflower-like pedunculated</td>
<td>n = 8, 2.5-4 cm</td>
<td>+, 4 Months</td>
<td>Mild, Thuja (mother tincture) orally</td>
</tr>
<tr>
<td>BDN-4</td>
<td>Feb’2010</td>
<td>Swapan Sur Baidyapur Kalna-2 Block Burdwan</td>
<td>Bovine:8 CBJ-4 ND-4</td>
<td>CBJ HF-1, 18 months</td>
<td>Multiple warts on for limbs, thorax and axilla</td>
<td>Hard, horny Pedunculated warts</td>
<td>n&gt;50, 2-2.5 cm</td>
<td>++++, 6 Months</td>
<td>Severe, auto-hemotherapy tried</td>
</tr>
<tr>
<td>BDN-5</td>
<td>Feb’2010</td>
<td>Sadhan Das Satgachia Kalna-2 Block Burdwan</td>
<td>Bovine:4 CBJ-2 ND-2</td>
<td>CBJ MC-1, 8 Months</td>
<td>Neck and rump region</td>
<td>Cauliflower-like pedunculated</td>
<td>n = 3, 4 cm</td>
<td>+, 3 Months</td>
<td>Mild, surgical cure</td>
</tr>
<tr>
<td>BDN-6</td>
<td>Feb’2010</td>
<td>Alomoni Soren Satgachia Kalna-2 Block Burdwan</td>
<td>Bovine:5 CBJ-1 ND-4</td>
<td>CBJ HF-1,2 Years</td>
<td>Left flank, axilla and left thigh</td>
<td>Hard, horny, cauliflower like ,pedunculated warts</td>
<td>n = 20, 2-3 cm</td>
<td>+++</td>
<td>Moderate, Inj. Anthiomalinie tried</td>
</tr>
<tr>
<td>BDN-7</td>
<td>Feb’2010</td>
<td>Susanta Rana Kalna-2 Block Burdwan</td>
<td>Bovine:6 CBJ-3 ND-3</td>
<td>CBJ HF-1.2, .5 Years</td>
<td>Head, neck and fore limbs</td>
<td>Round, dome shaped, non pedunculated</td>
<td>n&gt;50, 1-3 cm</td>
<td>++++, 6 Months</td>
<td>Severe, maggotized, Inj. Ivermectin tried</td>
</tr>
<tr>
<td>BDN-8</td>
<td>Feb’2010</td>
<td>Biswanath Kshetrapal Kalyanpur</td>
<td>Bovine:12 ND-10</td>
<td>Zebu calf, 1.5 year</td>
<td>Peri-anal region and tail base</td>
<td>Cauliflower-like, pedunculated</td>
<td>n = 12, 1-2 cm</td>
<td>+++, 7 Months</td>
<td>Moderate, Thuja (mother</td>
</tr>
<tr>
<td>BDN</td>
<td>Month</td>
<td>Owner Name</td>
<td>Species</td>
<td>Age</td>
<td>Area of Warts</td>
<td>Type of Warts</td>
<td>Number</td>
<td>Size</td>
<td>Duration</td>
</tr>
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</tr>
<tr>
<td>BDN-9</td>
<td>Feb'2010</td>
<td>Kanchan Manna</td>
<td>Bovine:6</td>
<td>CBJ-4, Gir-2</td>
<td>Around the vulva (perigenital warts)</td>
<td>Cauliflower-like pedunculated</td>
<td>1, 4 cm</td>
<td>+, 3 Months</td>
<td>Mild, surgical cure</td>
</tr>
<tr>
<td>BDN-10</td>
<td>Feb'2010</td>
<td>Kartick Ghosh, Khandagholsh, Burdwan</td>
<td>Bovine:10</td>
<td>ND-8, CBJ-2</td>
<td>Around the eyes (Periorbital warts)</td>
<td>Round, dome shaped, non pedunculated</td>
<td>12.1-2 cm</td>
<td>++++, 4 Months</td>
<td>Moderate, Maggotized, Inj. Ivermectin tried</td>
</tr>
<tr>
<td>BDN-11</td>
<td>Feb'2010</td>
<td>Palash Ghosh, Khandagholsh, Burdwan</td>
<td>Bovine:10</td>
<td>ND-8, CBJ-2</td>
<td>Right ear Pinna</td>
<td>Round, dome shaped, non pedunculated</td>
<td>6.1-2 cm</td>
<td>+, 3 Months</td>
<td>Mild, Thuja (mother tincture) orally</td>
</tr>
<tr>
<td>BDN-12</td>
<td>Feb'2010</td>
<td>Sankar Biswas, Jalhati Mathpara, Samudragarh</td>
<td>Bovine:6</td>
<td>ND-4, CBJ-2</td>
<td>Hind limbs, lumber region and axilla</td>
<td>Flattened non pedunculated</td>
<td>&gt;50 cm, 1-3 cm</td>
<td>++++, 7 Months</td>
<td>Severe, complicated owing to trauma, Auto-hemotherapy tried</td>
</tr>
<tr>
<td>BDN-13</td>
<td>Feb'2010</td>
<td>Subodh Dutta, Kisoriganj Purbasthali</td>
<td>Bovine:9</td>
<td>CBJ-5, ND-4</td>
<td>Fore limbs below carpus and right neck</td>
<td>Sessile type warts</td>
<td>21.2-4 cm</td>
<td>++++, 5 Months</td>
<td>Moderate, Inj. Levamisole tried</td>
</tr>
<tr>
<td>BDN-14</td>
<td>Feb'2010</td>
<td>Asish Halder, Akalpoush, Kalna-2 Block</td>
<td>Bovine:5</td>
<td>CBJ-2, ND-3</td>
<td>Periorbital area</td>
<td>Squat type</td>
<td>8, 2-3 cm</td>
<td>+, 3 Months</td>
<td>Mild, surgical cure</td>
</tr>
<tr>
<td>BDN-15</td>
<td>Feb'2010</td>
<td>Sitaram Murmu, Baidyapur, Kalna-2 Block</td>
<td>Bovine:4</td>
<td>ND-4</td>
<td>Around the vulva (Paragenital warts)</td>
<td>Sessile type</td>
<td>7.2-3 cm</td>
<td>+, 3 Months</td>
<td>Mild, Thuja (mother tincture) orally</td>
</tr>
<tr>
<td>BDN-16</td>
<td>Feb'2010</td>
<td>Govinda Pal, Anukhal, Kalna-2 Block</td>
<td>Bovine:6</td>
<td>ND-4, CBJ-2</td>
<td>Right Axilla and medial aspect of right thigh</td>
<td>As if bunch of grapes, nodular dome shaped, non pedunculated warts</td>
<td>23, 2-3 cm</td>
<td>++++, 5 Months</td>
<td>Complicated/Moderate, Inj. Anthiomaline tried</td>
</tr>
<tr>
<td>BDN-17</td>
<td>Feb'2010</td>
<td>Toyeba Bibi, Pindira, Kalna-2 Block</td>
<td>Bovine:6</td>
<td>Gir-4, ND-2</td>
<td>Head, neck and face</td>
<td>Sessile and tags type (mixed)</td>
<td>12, 1-2 cm</td>
<td>++++, 7 Months</td>
<td>Moderate, Inj. Anthiomaline tried</td>
</tr>
<tr>
<td>BDN-18</td>
<td>May'2010</td>
<td>Malati Dalui, Satgachia, Kalna-2 Block</td>
<td>Bovine:12</td>
<td>CBJ-4</td>
<td>Around the eyes and ear tips</td>
<td>Scattered nodular pedunculated warts</td>
<td>21.1-2 cm</td>
<td>++++, 6 Months</td>
<td>Moderate/Complicated, maggotized, Thuja</td>
</tr>
<tr>
<td>Block</td>
<td>ND-8</td>
<td>Bovine:</td>
<td>ND FC-1, 9 Months</td>
<td>Around the eyes</td>
<td>Nodular dome shaped non pedunculated warts</td>
<td>n = 8, 1-3cm</td>
<td>+, 3 Months</td>
<td>(mother tincture) orally</td>
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<tr>
<td>Rina Kora Badla, Kalna-II</td>
<td>Bovine:10 CBJ-2 ND-8</td>
<td>ND HF-1, 2.5 years</td>
<td>Face, ear tip and neck</td>
<td>Diffuse dome shaped, non pedunculated warts</td>
<td>n = 16, 1.5-2 cm</td>
<td>++++, 7 Months</td>
<td>Moderate, Auto-hemotherapy</td>
<td></td>
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</tr>
<tr>
<td>May-2010</td>
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<td></td>
<td></td>
<td></td>
<td>Nodular dome shaped non pedunculated warts</td>
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<tr>
<td>Sk. Nazimul Haque Jagulipara, Bardhaman</td>
<td>Bovine:6 Gir-4 ND-2</td>
<td></td>
<td></td>
<td>Diffuse dome shaped pedunculated warts</td>
<td>n = 26, 1.5-2 cm</td>
<td>++++, 6 Months</td>
<td>Moderate, Auto-hemotherapy</td>
<td></td>
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<tr>
<td>May-2010</td>
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<td></td>
<td></td>
<td></td>
<td>Diffuse dome shaped pedunculated warts</td>
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<tr>
<td>Sk. Asgar Ali Jagulipara, Bardhaman</td>
<td>Bovine:9 CBJ-4 Gir-5</td>
<td></td>
<td></td>
<td>Small cauliflower like pedunculated warts</td>
<td>n = 20, 2-3 cm</td>
<td>++++, 5 Months</td>
<td>Moderate, Auto-hemotherapy</td>
<td></td>
<td></td>
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<tr>
<td>May-2010</td>
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<td></td>
<td></td>
<td></td>
<td>Small cauliflower like pedunculated warts</td>
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<tr>
<td>Ankur Samanta Nityanandapur, Bhatar Block</td>
<td>Bovine:6 CBJ-4 ND-2</td>
<td></td>
<td></td>
<td>Cauliflower like pedunculated warts</td>
<td>n = 20, 1-2 cm</td>
<td>++++, 5 Months</td>
<td>Moderate, Thuja (mother tincture) orally</td>
<td></td>
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<tr>
<td>May-2010</td>
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<td></td>
<td></td>
<td></td>
<td>Cauliflower like pedunculated warts</td>
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<tr>
<td>Bablu Bairagya Nityanandapur, Bhatar Block</td>
<td>Bovine:10 Gir-5 ND-5</td>
<td></td>
<td></td>
<td>Squat type warts</td>
<td>n = 25, 3-4 cm in diameter</td>
<td>++++, 5 Months</td>
<td>Moderate, Thuja (mother tincture) orally</td>
<td></td>
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</tr>
<tr>
<td>May-2010</td>
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<td></td>
<td></td>
<td></td>
<td>Squat type warts</td>
<td></td>
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</tr>
<tr>
<td>Nurul Islam Patna, Bhatar Block</td>
<td>Bovine:6 CBJ-4 ND-2</td>
<td></td>
<td></td>
<td>Non pedunculated warts</td>
<td>n = 20, 3-5 cm in diameter</td>
<td>++++, 5 Months</td>
<td>Moderate, Thuja (mother tincture) orally</td>
<td></td>
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</tr>
<tr>
<td>May-2010</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Non pedunculated warts</td>
<td></td>
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<tr>
<td>Subhas Hajra Balgona, Bhatar Block</td>
<td>Bovine:7 ND-5 Gir-2</td>
<td></td>
<td></td>
<td>Neck and elbow point</td>
<td>n = 16, 3-6 cm in diameter</td>
<td>++++, 5 Months</td>
<td>Moderate, Levamisole orally</td>
<td></td>
<td></td>
</tr>
<tr>
<td>May-2010</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Neck and elbow point</td>
<td></td>
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<tr>
<td>Sk Enamul Balgona, Bhatar Block</td>
<td>Bovine:6 ND-4 Gir-2</td>
<td></td>
<td></td>
<td>Cauliflower like warts, pedunculated</td>
<td>n = 16, 3-6 cm in diameter</td>
<td>++++, 5 Months</td>
<td>Moderate, Levamisole orally</td>
<td></td>
<td></td>
</tr>
<tr>
<td>May-2010</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Cauliflower like warts, pedunculated</td>
<td></td>
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</tr>
<tr>
<td>Santi Rudra Balgona, Bhatar Block</td>
<td>Bovine:12 ND-6 CBJ-6</td>
<td></td>
<td></td>
<td>Cauliflower like warts, pedunculated</td>
<td>n&gt;20, 1-2 cm</td>
<td>++++, 5 Months</td>
<td>Moderate, Auto-hemotherapy</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BDN-29</td>
<td>May-2010</td>
<td>Chandana Mondal</td>
<td>Bubaline:3</td>
<td>ND Buff HF-1, 3 Years</td>
<td>Head and both sides of the neck</td>
<td>Cauliflower like pedunculated warts</td>
<td>n = 25, 3-4 cm in diameter</td>
<td>+++, 5 Months</td>
<td>Moderate, Auto-hemotherapy</td>
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<tr>
<td>BDN-30</td>
<td>May-2010</td>
<td>Ardhendu Ray Kosigram, Bhatar Block</td>
<td>Bovine:6 ND-4 Gir-2</td>
<td>ND HF-1, 1.5 Years</td>
<td>Around the eyes</td>
<td>Small cauliflower like warts, pedunculated type</td>
<td>n = 20, 3-5 cm in diameter</td>
<td>+++, 5 Months</td>
<td>Moderate, Auto-hemotherapy</td>
</tr>
<tr>
<td>BDN-31</td>
<td>May-2010</td>
<td>Badrul Alam Patna, Bhatar Block</td>
<td>Bubaline:5 MB HF-1, 3 Years</td>
<td>Peri orbital warts</td>
<td>Nodular and dome shaped warts</td>
<td>n = 16, 3-6 cm in diameter</td>
<td>+++, 5 Months</td>
<td>Moderate, Thuja (mother tincture) orally</td>
<td></td>
</tr>
<tr>
<td>BDN-32</td>
<td>May-2010</td>
<td>Ek Kari Majhi Muratipur, Bhatar Block</td>
<td>Bovine:6 ND-4 Gir-2</td>
<td>ND HF-1, 1.5 Years</td>
<td>Eyes and ears</td>
<td>Squat type</td>
<td>n &gt; 20, 1-2 cm</td>
<td>+++, 5 Months</td>
<td>Inj. Ivermectin tried</td>
</tr>
<tr>
<td>BDN-33</td>
<td>May-2010</td>
<td>Mofizul Haque Balgona, Bhatar Block</td>
<td>Bovine:12 ND-6 CBJ-6</td>
<td>Gir MC-1, 13 Months</td>
<td>Fore limbs</td>
<td>Raised, firm pedunculated warts</td>
<td>n = 25, 3-4 cm in diameter</td>
<td>+++, 5 Months</td>
<td>Moderate, Auto-hemotherapy</td>
</tr>
<tr>
<td>BDN-34</td>
<td>May-2010</td>
<td>Jagabandhu Samanta Balgona, Bhatar Block</td>
<td>Bovine:10 ND-5 CBJ-5</td>
<td>ND HF-1, 2 Years</td>
<td>Neck and fore limbs</td>
<td>Small nodular warts, non-pedunculated</td>
<td>n = 20, 3-5 cm in diameter</td>
<td>+++, 5 Months</td>
<td>Moderate, Auto-hemotherapy</td>
</tr>
<tr>
<td>BDN-35</td>
<td>May-2010</td>
<td>Isidev Rudra Dheria, Balgona, Bhatar Block</td>
<td>Bovine:6 ND-4 Gir-2</td>
<td>Gir cow-1, 4 Years</td>
<td>All four teats</td>
<td>Scattered warts, rice grain type</td>
<td>n = 16, 1-2 cm</td>
<td>+++, 5 Months</td>
<td>Moderate, Thuja (mother tincture) orally</td>
</tr>
<tr>
<td>BDN-36</td>
<td>May-2010</td>
<td>Jalal Sk Patna, Bhatar Block</td>
<td>Bovine:9 ND-6 Gir-3</td>
<td>Gir HF-1, 3 Years</td>
<td>Para genital region</td>
<td>Warts in cluster, pedunculated</td>
<td>n = 23, 2-4 cm</td>
<td>+++, 6 Months</td>
<td>Moderate, Thuja orally</td>
</tr>
<tr>
<td>BDN-37</td>
<td>May-2010</td>
<td>Sirazul Islam Patna, Bhatar Block</td>
<td>Bovine:5 ND-4 Gir-1</td>
<td>Gir HF-1, 3 Years</td>
<td>Hind limbs above the hock</td>
<td>Small cauliflower like warts</td>
<td>n = 25, 3-4 cm in diameter</td>
<td>+++, 5 Months</td>
<td>Moderate, Thuja (mother tincture) orally</td>
</tr>
<tr>
<td>BDN-38</td>
<td>May-2010</td>
<td>Korim Sk Patna, Bhatar Block</td>
<td>Bovine:4 Sahiwal-2 ND-2</td>
<td>Sahiwal cow-1, 4 Years</td>
<td>Mammary gland</td>
<td>Small dome shaped, non-pedunculated warts</td>
<td>n = 20, 2-3 cm in diameter</td>
<td>+++, 7 Months</td>
<td>Moderate, Auto-hemotherapy</td>
</tr>
<tr>
<td>BDN-39</td>
<td>May-2010</td>
<td>Azaharuddin Sk Muratipur, Bhatar Block</td>
<td>Bovine:3 HLX-2 ND-1</td>
<td>HLX Cow-1, 4 Years</td>
<td>Teats only</td>
<td>Frond type non-pedunculated warts</td>
<td>n &gt; 20, 1-2 cm</td>
<td>+++, 5 Months</td>
<td>Moderate, Auto-hemotherapy</td>
</tr>
<tr>
<td>BDN-40</td>
<td>June-2010</td>
<td>Jagannath Dhara, Patna, Bhatar Block</td>
<td>Bovine:3 Gir HF-1, 3</td>
<td>Head, neck and brisket</td>
<td>Small cauliflower like</td>
<td>n = 25, 3-4 cm in diameter</td>
<td>+++, 5 Months</td>
<td>Moderate,</td>
<td></td>
</tr>
<tr>
<td>S. No.</td>
<td>Date</td>
<td>Panpur, Bhatar Block</td>
<td>ND</td>
<td>Years</td>
<td>Warts, Pedunculated type</td>
<td>Diameter</td>
<td>Anthiomaline therapy</td>
<td></td>
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<td></td>
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</tr>
<tr>
<td>BDN-41</td>
<td>June-2010</td>
<td>Sk Sahabul, Ramnagar Bhatar Block</td>
<td>ND-2 Gir-1</td>
<td>CBJ HF-1, 3 Years</td>
<td>Small cauliflower like warts, Pedunculated type</td>
<td>n=20, 1-2 cm in diameter</td>
<td>++++, 5 Months</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BDN-42</td>
<td>Dec-2010</td>
<td>Sanjeet Ghosh Bhatpara, Mongalkote (MKT)Block</td>
<td>ND-1 CBJ-2</td>
<td>CBJ HF-1, 16 Months</td>
<td>Hard, horny, cauliflower like warts, Pedunculated type</td>
<td>n=25, 3-4 cm in diameter</td>
<td>++++, 6 Months</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BDN-43</td>
<td>Dec-2010</td>
<td>Subrata Pal Kasem Nagar, MKT Block</td>
<td>ND-4 Gir-1</td>
<td>ND HF-1, 2.5 years</td>
<td>Unsightly rough, lobate and fungiform warts, Non pedunculated type</td>
<td>n=20, 3-5 cm in diameter</td>
<td>++++, 5 Months</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BDN-44</td>
<td>Dec-2010</td>
<td>Subrata Pal Kasem Nagar, MKT Block</td>
<td>ND-5 Gir-2</td>
<td>CBJ HF-1, 2 Years</td>
<td>Hind limbs, left axilla and tail base</td>
<td>n=16, 1-3 cm in diameter</td>
<td>++++, 7 Months</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BDN-45</td>
<td>Dec-2010</td>
<td>Abul Hussain Mathroon, MKT Block</td>
<td>ND-1 Gir-1</td>
<td>ND HF-1, 2 Years</td>
<td>Hard, typical spiny pedunculated warts</td>
<td>n&gt;20, 1-2 cm</td>
<td>++++, 5 Months</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BDN-46</td>
<td>Dec-2010</td>
<td>Kuntal De Chaitanya Pur, MKT Block</td>
<td>ND-1 Gir-3</td>
<td>ND HF-1, 1.5 years</td>
<td>Muzzle and rimaoris</td>
<td>n=25, 3-4 cm in diameter</td>
<td>++++, 4 Months</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BDN-47</td>
<td>Dec-2010</td>
<td>Chandu Ghosh Chaitanyapur, MKT Block</td>
<td>ND-1 Gir-1</td>
<td>Gir HF-1, 3 Years</td>
<td>Around eyes and muzzle</td>
<td>n=25, 3-4 cm in diameter</td>
<td>++++, 5 Months</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BDN-48</td>
<td>Dec-2010</td>
<td>Yusuf SK Chak village, MKT Block</td>
<td>ND-2 Gir-1</td>
<td>ND HF-1, 1.5 years</td>
<td>Fore limbs, brisket and thorax</td>
<td>n=20, 3-5 cm in diameter</td>
<td>++++, 6 Months</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BDN-49</td>
<td>Dec-2010</td>
<td>Obed SK Bonpara, MKT Block</td>
<td>ND-1</td>
<td>HLX HF-1, 16 Months</td>
<td>Head, ear base and both sides of the neck</td>
<td>n=16, 3-6 cm in diameter</td>
<td>++++, 5 Months</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BDN-50</td>
<td>Dec-2010</td>
<td>Toyeb Ali Bonpara, MKT Block</td>
<td>ND-3 CBJ-2</td>
<td>MB HF-1, 2.5 years</td>
<td>Back and both sides of the barrel</td>
<td>n=25, 3-4 cm in diameter</td>
<td>++++, 7 Months</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BDN-51</td>
<td>June-2011</td>
<td>Chand Mondal</td>
<td>ND-1</td>
<td>CBJ HF-1, 2 Years</td>
<td>Hind limbs, trunk and Hard, horny, cauliflower</td>
<td>n=20, 3-5 cm in diameter</td>
<td>++++, 5 Months</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Results
<table>
<thead>
<tr>
<th>Case</th>
<th>Date</th>
<th>Location</th>
<th>Species, Breed</th>
<th>Age, Years</th>
<th>Location</th>
<th>Description</th>
<th>Number, Diameter (cm)</th>
<th>Treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td>BDN-52</td>
<td>June-2011</td>
<td>Nabagram MKT Block</td>
<td>Bovine:6 ND-4 Gir-2</td>
<td>ND HF-1, 3</td>
<td>Head, neck, dewlap and left fore limb</td>
<td>Unsightly rough, lobate and fungiform warts, Non-pedunculated warts</td>
<td>n=16, 3-6 in diameter</td>
<td>++++, 6 Months</td>
</tr>
<tr>
<td>BDN-53</td>
<td>June-2011</td>
<td>Paligram MKT Block</td>
<td>Bovine:10 ND-5 CBJ-5</td>
<td>ND HF-1, 1.5</td>
<td>Face, neck, back and barrel</td>
<td>Warts with various stages of development, nodular and pea shaped warts</td>
<td>n=35, 1-2 cm</td>
<td>++++, 5 Months</td>
</tr>
<tr>
<td>BDN-54</td>
<td>June-2011</td>
<td>Sinut MKT Block</td>
<td>Bovine:6 ND-4 Gir-2</td>
<td>Gir HF-1, 3</td>
<td>Posterior lumber and hind limbs</td>
<td>Hard, typical spiny pedunculated warts</td>
<td>n=26, 3-4 cm in diameter</td>
<td>++++, 7 Months</td>
</tr>
<tr>
<td>BDN-55</td>
<td>June-2011</td>
<td>Khudrun</td>
<td>Bovine:9 ND-6 Gir-3</td>
<td>ND HF-1, 1.5</td>
<td>Paragenital region and hind limbs</td>
<td>Warts with various stages of development, nodular and pea shaped warts</td>
<td>n=25, 2-3 cm in diameter</td>
<td>++++, 5 Months</td>
</tr>
<tr>
<td>BDN-56</td>
<td>June-2011</td>
<td>Nigon, MKT Block</td>
<td>Bovine:5 ND-4 Gir-1</td>
<td>Gir HF-1, 18 Months</td>
<td>Whole body papillomatosis</td>
<td>Hard, typical spiny pedunculated warts</td>
<td>n=250, 3-5 cm in diameter</td>
<td>++++, 6 Months</td>
</tr>
<tr>
<td>BDN-57</td>
<td>June-2011</td>
<td>Belgram, MKT Block</td>
<td>Bovine:6 ND-2, CBJ-2 Gir-2</td>
<td>ND HF-1, 2.5</td>
<td>Only on hind limbs</td>
<td>Small nodular and cauliflower like warts</td>
<td>n=16, 2-6 cm in diameter</td>
<td>++++, 5 Months</td>
</tr>
<tr>
<td>BDN-58</td>
<td>June-2011</td>
<td>Belgram MKT Block</td>
<td>Bovine:5 ND-3 CBJ-1, Gir-1</td>
<td>CBJ HF-1, 2.5</td>
<td>Head, neck and fore limbs</td>
<td>Squat type warts</td>
<td>n=20, 1-2 cm</td>
<td>++++, 7 Months</td>
</tr>
</tbody>
</table>
Table-6: Breed, age group and sex wise synopsis of cutaneous wart (CWT) and teat papilloma (TP) recorded in cattle and buffalo in Burdwan

<table>
<thead>
<tr>
<th>Breeds affected</th>
<th>Total susceptible population in the herd</th>
<th>Total No. of wart cases</th>
<th>Sex</th>
<th>Age group (category of animals)</th>
<th>No of CWT cases</th>
<th>No of TP cases</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Calf hood</td>
<td>Sub-adult</td>
<td>Adult</td>
</tr>
<tr>
<td>Indigenous and non-descript cattle</td>
<td>296</td>
<td>33</td>
<td>F-28</td>
<td>1</td>
<td>25</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>M-5</td>
<td>5</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Cross breed cattle (CBJ)</td>
<td>94</td>
<td>20</td>
<td>F-18</td>
<td>-</td>
<td>18</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>M-2</td>
<td>2</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Pure breed cattle</td>
<td>-</td>
<td>-</td>
<td>F</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>M</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Cross breed cattle (HLX)</td>
<td>4</td>
<td>2</td>
<td>F-2</td>
<td>-</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>M</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Buffalo</td>
<td>10</td>
<td>3</td>
<td>F-3</td>
<td>-</td>
<td>3</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>M</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Grand Total</td>
<td>404</td>
<td>58</td>
<td>F-51</td>
<td>8</td>
<td>47</td>
<td>3</td>
</tr>
</tbody>
</table>
### Table-7: Field level survey on bovine and bubaline cutaneous papillomatosis in Purulia District of West Bengal

<table>
<thead>
<tr>
<th>Sl No</th>
<th>Period of survey</th>
<th>Owners name &amp; address</th>
<th>Species &amp; herd strength</th>
<th>Category of animals affected</th>
<th>Distribution of warts</th>
<th>No &amp; size</th>
<th>Duration &amp; severity of infection</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>PRL-1</td>
<td>November-2009</td>
<td>Jagadish Mahato Nosina, Purulia</td>
<td>Bovine and bubaline, Herd of 5 cattle and 2 male buffaloes</td>
<td>ND Cow-1, 3 years</td>
<td>Multi centric horny pedunculated warts on eyes, neck and interscapular region</td>
<td>n = 20, 3-4 cm</td>
<td>6 Months, ++++, Moderate</td>
<td>Homeopathic medicines used for treatment</td>
</tr>
<tr>
<td>PRL-2</td>
<td>November-2009</td>
<td>Swadesh Ranjan Mahato, Nutan Dihi, Nosina, Purulia</td>
<td>Bovine, Herd of 6 Indigenous cattle</td>
<td>Gir HF-1, 2 Years</td>
<td>Small cauliflower like pedunculated warts on face, eyelids, ears and neck</td>
<td>n = 15, 2-3 cm</td>
<td>6 Months,++++, Moderate</td>
<td>Levamisole oral therapy</td>
</tr>
<tr>
<td>PRL-3</td>
<td>November-2009</td>
<td>Mahadev Sardar Bagda, Puncha, Purulia</td>
<td>Bovine, Herd of 6 Indigenous cattle</td>
<td>Sahiwal HF-1, 28 Months</td>
<td>Cauliflower like pedunculated warts on head, neck and belly</td>
<td>n = 25, 2-3 cm</td>
<td>4 Months,++++, Moderate</td>
<td>Inj. Anthiomaline tried</td>
</tr>
<tr>
<td>PRL-4</td>
<td>November-2009</td>
<td>Shankar Sardar Ramkundi, Puncha, Purulia</td>
<td>Bovine, Herd of 4 ND and 2 Gir cattle</td>
<td>Gir MC-1, 12 Months</td>
<td>Nodular warts on ear base, ear pinnae and lower neck</td>
<td>n = 12, 3-4 cm</td>
<td>3 Months,++++, Moderate</td>
<td>Inj. Anthiomaline tried</td>
</tr>
<tr>
<td>PRL-5</td>
<td>November-2009</td>
<td>Babu Mondal Ramkundi, Puncha, Purulia</td>
<td>Bovine, Herd of 4 ND and 2 Gir cattle</td>
<td>Gir HF-1, 22 Months</td>
<td>Small pedunculated warts on fore limbs and neck region</td>
<td>n = 20, 1-2 cm</td>
<td>6 Months,++++, Moderate</td>
<td>Thuja orally</td>
</tr>
<tr>
<td>PRL-6</td>
<td>December-2010</td>
<td>Paran Mahato Susro, Purulia-1</td>
<td>Bovine, Herd of 4 ND and 2 Gir cattle</td>
<td>Gir HF-1, 2 Years</td>
<td>Cauliflower like pedunculated warts on neck, dewlap and back</td>
<td>n = 16, 3-4 cm</td>
<td>5 Months,++++, Moderate</td>
<td>Inj. Anthiomaline tried</td>
</tr>
<tr>
<td>PRL-7</td>
<td>December-2010</td>
<td>Dhiren Kuiri, Kankorberia, Purulia-1</td>
<td>Bovine, Herd of 2 CBJ and 4 ND cattle</td>
<td>CBJ Cow-1, 3 Years</td>
<td>Dome shaped small warts on udder and hind teats</td>
<td>n = 10, 1-1.5 cm</td>
<td>5 Months,+, Mild</td>
<td>Homeopathic remedy with Thuja orally</td>
</tr>
<tr>
<td>PRL-8</td>
<td>December-2010</td>
<td>Bharat Rajwar, Babudi, Purulia-1</td>
<td>Bovine, Herd of 6 ND cattle</td>
<td>ND BK-1, 4 Years</td>
<td>Squat type wart on the neck region</td>
<td>n = 8, 5-6cm</td>
<td>5 Months, +, Mild</td>
<td>Surgical excision done</td>
</tr>
<tr>
<td>PRL-9</td>
<td>December-2010</td>
<td>Rampada Mahato, Mahalitona, Purulia-1</td>
<td>Bovine, Herd of 6 ND cattle</td>
<td>ND Cow-1, 3 years</td>
<td>Left thigh region and right axilla (cluster of pedunculated warts)</td>
<td>n = 25, 2-3 cm</td>
<td>6 Months,++++, Moderate</td>
<td>Levamisole oral therapy</td>
</tr>
<tr>
<td>PRL-10</td>
<td>December-2010</td>
<td>Bibhuti Kuri, Bhool, Purulia-1</td>
<td>Bovine, Herd of 2 HLX and 4 ND cattle</td>
<td>HLX HF-1, 2 Years</td>
<td>Cauliflower like pedunculated warts on hind limbs</td>
<td>n = 25, 2-3 cm</td>
<td>7 Months,++++, Moderate</td>
<td>Inj. Anthiomaline tried</td>
</tr>
<tr>
<td>PRL-11</td>
<td>December-2010</td>
<td>Hiralal Kuri, Bhool, Purulia-1</td>
<td>Bovine, Herd of 10 ND cattle</td>
<td>ND Cow-1, 3 years</td>
<td>Multiple cauliflower like warts around the vulval lips (paragenital warts) warts</td>
<td>n = 20, 1-3 cm</td>
<td>4 Months,++++, Moderate</td>
<td>Homeopathic remedy with Thuja orally</td>
</tr>
<tr>
<td>PRL-12</td>
<td>December-2010</td>
<td>Nirmal Mahato, Chakra, Purulia-1</td>
<td>Bovine, Herd of 5 ND cattle</td>
<td>NDMC-1,14 Months</td>
<td>Dome shaped and nodular non pedunculated warts on head, neck and inter scapular region</td>
<td>n = 12, 2-4cm</td>
<td>3 Months,++++, Moderate</td>
<td>Homeopathic remedy with Thuja orally</td>
</tr>
<tr>
<td>PRL-13</td>
<td>December-2010</td>
<td>Aditya Gope, Shyampur,</td>
<td>Bovine, Herd of 5 ND cattle</td>
<td>CBJ HF -1, 3 Years</td>
<td>Multiple pedunculated warts on</td>
<td>n = 30, 2-3 cm</td>
<td>6 Months,++++, Levamisole oral</td>
<td></td>
</tr>
<tr>
<td>PRL</td>
<td>Date</td>
<td>Bird Name</td>
<td>'%'</td>
<td>Health Issues</td>
<td>Size</td>
<td>Severity</td>
<td>Therapy</td>
<td></td>
</tr>
<tr>
<td>------</td>
<td>------------</td>
<td>----------------------</td>
<td>-----</td>
<td>------------------------------------------------------------------------------</td>
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<td>--------------------------------</td>
<td></td>
</tr>
<tr>
<td>PRL-14</td>
<td>December-2010</td>
<td>Idris Ansari, Islandi, Purulia-1</td>
<td>Bovine, Herd of 6 ND and 2 RS cattle</td>
<td>RS HF-1, 16 Months</td>
<td>Multiple sessile outgrowths on neck, dewlap and brisket</td>
<td>n = 25,3-5cm</td>
<td>Moderate</td>
<td>Inj. Ivermectin by S/C route</td>
</tr>
<tr>
<td>PRL-15</td>
<td>December-2010</td>
<td>Swapan Dutta, Lagda, Purulia-1</td>
<td>Bovine, Herd of 4 ND and 2 CBJ cattle</td>
<td>CBJ HF -1, 3 Years</td>
<td>Scattered non pedunculated warts on fore limbs and both sides of the belly</td>
<td>n = 25, 2-3 cm</td>
<td>6 Months, ++++, Moderate, +++</td>
<td>Inj. Anthiomalone tried</td>
</tr>
<tr>
<td>PRL-16</td>
<td>June-2011</td>
<td>Lalmohon Mahato, Ramnagar, Purulia-1</td>
<td>Bovine, Herd of 8 ND and 2 RS cattle</td>
<td>RS HF-1, 16 Months</td>
<td>Whole body affection with numerous cauliflower like pedunculated warts</td>
<td>n&gt;100, 1-5 cm</td>
<td>3 Months, ++++, Severe</td>
<td>Levamisole oral therapy</td>
</tr>
<tr>
<td>PRL-17</td>
<td>June-2011</td>
<td>Sunil Roy, Nadiara, Purulia-1</td>
<td>Bovine, Herd of 6 ND cattle</td>
<td>NDMC-1,10 Months</td>
<td>Extensive lesions on limbs and body surface</td>
<td>n&gt;100, 2-4cm</td>
<td>3 Months, ++++, Severe</td>
<td>Levamisole oral therapy</td>
</tr>
<tr>
<td>PRL-18</td>
<td>June-2011</td>
<td>Dhiresn Mahato, Khudibandh, Purulia-1</td>
<td>Bovine, Herd of 4 ND cattle</td>
<td>ND Cow-1, 4 years</td>
<td>Frond type warts on front right teat only</td>
<td>n = 10, 1-1.5 cm</td>
<td>5 Months, +, Mild</td>
<td>Homeopathic remedy with Thuja orally</td>
</tr>
<tr>
<td>PRL-19</td>
<td>June-2011</td>
<td>Birinhi Mahato, Kashidi, Manbazar, Purulia</td>
<td>Bovine, Herd of 10 ND and 2 Gir cattle</td>
<td>Gir HF-1, 26 Months</td>
<td>Whole body affection with warts(squat type)</td>
<td>n&gt;100, 1-5 cm</td>
<td>4 Months, ++++, Severe</td>
<td>Levamisole oral therapy</td>
</tr>
<tr>
<td>PRL-20</td>
<td>June-2011</td>
<td>Gurupada Mahato, Chepua, Purulia</td>
<td>Bovine, Herd of 4 ND and 2 Gir cattle</td>
<td>Gir HF-1, 3 Years</td>
<td>Around the vulva (Perigenital warts ) cauliflower like pedunculated warts</td>
<td>n = 8, 3-4 cm</td>
<td>5 Months, +, Mild</td>
<td>Surgical cure</td>
</tr>
<tr>
<td>PRL-21</td>
<td>June-2011</td>
<td>Makhan Rao, Ranga Road, Purulia</td>
<td>Bovine, Herd of 2 RS and 8 ND cattle</td>
<td>RS HF-1, 16 Months</td>
<td>Hind limbs and perineum (cauliflower like pedunculated warts)</td>
<td>n = 20, 1-3 cm</td>
<td>6 Months, ++++, Moderate</td>
<td>Left untreated</td>
</tr>
<tr>
<td>PRL-22</td>
<td>June-2011</td>
<td>Ramesh Gope, Telidi, Purulia</td>
<td>Bovine, Herd of 6 ND and 2 RS cattle</td>
<td>RS HF-1, 16 Months</td>
<td>Eyes and ears ( cauliflower like stalked warts)</td>
<td>n = 20, 1-3 cm</td>
<td>6 Months, ++++, Moderate</td>
<td>Levamisole orally</td>
</tr>
<tr>
<td>PRL-23</td>
<td>December-2011</td>
<td>Suchand Mahato, Hatiramgara</td>
<td>Bovine, Herd of 4 ND and 2 Gir cattle</td>
<td>Gir HF-1, 3 Years</td>
<td>Whitish grey colour, dome shaped warts on ventral iliac region in front of the stifle joint below the flank</td>
<td>n = 15, 3-5 cm</td>
<td>6 Months, ++++, Moderate</td>
<td>Inj. Ivermectin</td>
</tr>
</tbody>
</table>
Table 8: Breed, age group and sex wise synopsis of cutaneous wart (CWT) and teat papilloma (TP) in cattle and buffalo in Purulia District of Bengal

<table>
<thead>
<tr>
<th>Breeds affected</th>
<th>Animal population in the affected herd</th>
<th>Total No. clinical wart cases</th>
<th>Sex wise affection</th>
<th>Age group</th>
<th>No of CWT cases</th>
<th>No of TP cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indigenous and non-descript cattle</td>
<td>128</td>
<td>19</td>
<td>F-15</td>
<td>Calf hood</td>
<td>14</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>M-4</td>
<td>Sub-adult</td>
<td>4</td>
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<td>Species &amp; herd strength</td>
<td>Breed, age &amp; sex</td>
<td>Distribution of warts</td>
<td>Type of wart</td>
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<tr>
<td>WMP-01</td>
<td>December-2010</td>
<td>Sudip Mahato Khayerboni</td>
<td>Bovine : 6 ND Cow-4, ND HF-2</td>
<td>ND Cow-1, 4 years</td>
<td>All four teats</td>
<td>Rice grain</td>
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<tr>
<td>WMP-02</td>
<td>December-2010</td>
<td>Subhas Nag Tella, Garhbeta-1 Block</td>
<td>Bovine :7 CBJ Cow-3, NDHF-2, ND Cow-2</td>
<td>CBJ-1, 6 years</td>
<td>Teats and udder</td>
<td>Rice grain</td>
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<tr>
<td>WMP-03</td>
<td>December-2010</td>
<td>Pankaj Samanta Deuli, Garhbeta-1 Block</td>
<td>Bovine :12 ND Cow-4, ND FC-3, ND MC-1, CBJ Cow-2, CBJ FC-2</td>
<td>CBJ HF-1, 2.5 Years</td>
<td>Face and ear</td>
<td>Cauliflower like pedunculated</td>
</tr>
<tr>
<td>WMP-04</td>
<td>December-2010</td>
<td>Puri Nandan Samanta Deuli, Garhbeta-1 Block</td>
<td>Bovine :8 ND BK-2, ND Cow-4, ND FC-2</td>
<td>ND BK-1, 4 years</td>
<td>Both sides of the neck</td>
<td>Cauliflower like pedunculated</td>
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<td>WMP-05</td>
<td>December-2010</td>
<td>Shankar Maity Deuli, Garhbeta-1 Block</td>
<td>Bovine :4 Gir Cow-2, Gir MC-2</td>
<td>Indigenous MC-1, 11 Months</td>
<td>Face and fore limbs</td>
<td>Dome shaped non pedunculated</td>
</tr>
<tr>
<td>WMP-06</td>
<td>December-2010</td>
<td>Bablu Samanta Deuli, Garhbeta-1 Block</td>
<td>Bovine :6 ND Cow-4, ND HF-2</td>
<td>Deshi HF-1, 2 years</td>
<td>Fore limbs</td>
<td>Squat type</td>
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<tr>
<td>WMP-07</td>
<td>December-2010</td>
<td>Nirod Maity Deuli, Garhbeta-1 Block</td>
<td>Bovine :4 CBJ Cow-2, CBJ HF-2</td>
<td>CBJ HF-1, 3 Years</td>
<td>Neck &amp;Hump</td>
<td>Round, nodular non pedunculated</td>
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<tr>
<td>WMP-08</td>
<td>December-2010</td>
<td>Tarapada Parui Deuli, Garhbeta-1 Block</td>
<td>Bovine :2 CBJ Cow-1, CBJ FC-1</td>
<td>CBJ FC-1, 10 Months</td>
<td>Shoulder</td>
<td>Round, flat (Non pedunculated warts)</td>
</tr>
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<td>WMP-09</td>
<td>December-2010</td>
<td>Tarit Bag Tella, Garhbeta-1 Block</td>
<td>Bovine :3 ND Cow-2, ND FC-1</td>
<td>ND Cow, 8 Years</td>
<td>Udder and teats</td>
<td>Hard horny club shaped non pedunculated warts</td>
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<tr>
<td>WMP-10</td>
<td>December-2010</td>
<td>Sadhan Bag Tella, Garhbeta-1 Block</td>
<td>Bovine:6 Zebu BK-2, ND Cow-2, ND FC-2</td>
<td>Zebu BK-1, 3 Years</td>
<td>Neck</td>
<td>Big cauliflower like (pedunculated warts)</td>
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<tr>
<td>WMP-11</td>
<td>December-2010</td>
<td>Bijoy Bag Tella, Garhbeta-1 Block</td>
<td>Bovine :5 CBJ Cow-2, CBJ FC-1, ND Cow-2</td>
<td>CBJ HF-1, 2 Years</td>
<td>Hind legs</td>
<td>Small, pea shaped (non pedunculated warts)</td>
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<tr>
<td>WMP-12</td>
<td>December-2010</td>
<td>Nirapada Ghosh Tella, Garhbeta-1 Block</td>
<td>Bovine:4 CBJ Cow-2, CBJ FC-2</td>
<td>CBJ FC-1, 10 Months</td>
<td>Right axilla, and ventral abdomen</td>
<td>Cauliflower like pedunculated warts</td>
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<td>WMP-13</td>
<td>December-2010</td>
<td>Ajoy Bag Tella, Garhbeta-1 Block</td>
<td>Bovine:6</td>
<td>CBJ Cow-2, CBJ HF-1, ND Cow-2, ND MC-1</td>
<td>CBJ HF-1, 2 Years</td>
<td>Ear, neck and back</td>
</tr>
<tr>
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<tr>
<td>WMP-14</td>
<td>December-2010</td>
<td>Manik Ghosh Malla, Garhbeta-1 Block</td>
<td>Bovine:8</td>
<td>ND Cow-4, ND FC-2, CBJ Cow-1, CBJ FC-1</td>
<td>CBJ FC-1, 10 Months</td>
<td>Peri-orbital region (around the eyes)</td>
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<tr>
<td>WMP-15</td>
<td>December-2010</td>
<td>Joydev Ghosh Malla, Garhbeta-1 Block</td>
<td>Bovine:7</td>
<td>CBJ Cow-3, CBJ HF-1, ND Cow-2, ND MC-1</td>
<td>CBJ HF-1, 2 Years</td>
<td>Anal region</td>
</tr>
<tr>
<td>WMP-16</td>
<td>December-2010</td>
<td>Apodh Ghosh Malla, Garhbeta-1 Block</td>
<td>Bovine:11</td>
<td>ND Cow-6, CBJ HF-2, CBJ FC-2, CBJ Cow-1</td>
<td>CBJ FC-1, 10 Months</td>
<td>Lumber and tail base</td>
</tr>
<tr>
<td>WMP-17</td>
<td>December-2010</td>
<td>Probodh Ghosh Malla, Garhbeta-1 Block</td>
<td>Bovine:5</td>
<td>ND Cow-2, CBJ HF-2, ND Bull-1</td>
<td>CBJ HF-1, 2 Years</td>
<td>muzzle and ear tips</td>
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<tr>
<td>WMP-18</td>
<td>December-2010</td>
<td>Gera Ghosh Malla, Garhbeta-1 Block</td>
<td>Bovine:6</td>
<td>ND Cow-3, ND FC-2, ND MC-1</td>
<td>ND MC-1, 8 Months</td>
<td>Face and neck</td>
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<tr>
<td>WMP-19</td>
<td>December-2010</td>
<td>Arup Khan Gopalpur, Garhbeta-1 Block</td>
<td>Bovine:12</td>
<td>ND Cow-6, ND HF-3, ND FC-1, ND MC-2</td>
<td>ND MC-1, 8 Months</td>
<td>Head, neck, ears and back</td>
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<tr>
<td>WMP-20</td>
<td>December-2010</td>
<td>Sachin Nandan Pal Gopalpur, Garhbeta-1 Block</td>
<td>Bovine:9</td>
<td>ND BK-2, ND Cow-2, CBJ Cow-3, CBJ FC-2</td>
<td>CBJ FC-1, 10 Months</td>
<td>Fore limbs and back</td>
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<tr>
<td>WMP-21</td>
<td>December-2010</td>
<td>Pradip Khan Gopalpur, Garhbeta-1 Block</td>
<td>Bovine:10</td>
<td>ND Cow-4, ND HF-2, CBJ Cow-2, CBJ FC-2</td>
<td>CBJ HF-1, 2 Years</td>
<td>Sternum</td>
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<tr>
<td>WMP-22</td>
<td>December-2010</td>
<td>Pradip Khan Gopalpur, Garhbeta-1 Block</td>
<td>Bovine:6</td>
<td>ND Cow-3, ND FC-2, ND MC-1</td>
<td>ND MC-1, 8 Months</td>
<td>Fore limbs and back</td>
</tr>
<tr>
<td>WMP-23</td>
<td>December-2010</td>
<td>Sunil Tudu Gopalpur, Garhbeta-1 Block</td>
<td>Bovine:7</td>
<td>CBJ Cow-3, CBJ FC-2, ND Cow-2</td>
<td>CBJ HF-1, 2 Years</td>
<td>Peri-vulval region</td>
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<tr>
<td>WMP-24</td>
<td>December-2010</td>
<td>Lakshmi Kanta Ghosh Gopalpur, Garhbeta-1 Block</td>
<td>Bovine:7</td>
<td>CBJ Cow-2, CBJ HF-3, ND Cow-2</td>
<td>CBJ HF-1, 2 Years</td>
<td>Paragenital</td>
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<tr>
<td>WMP-25</td>
<td>December-2010</td>
<td>Parimal Bishoi Gopalpur, Garhbeta-1 Block</td>
<td>Bovine:10</td>
<td>CBJ Cow-4, CBJ HF-2, ND</td>
<td>CBJ HF-1, 2 Years</td>
<td>Fore limbs and back</td>
</tr>
<tr>
<td>Block</td>
<td>BK-2, ND Cow-2</td>
<td>CBJ HF-1, 2 Years</td>
<td>Ear tips and around eyes</td>
<td>Cauliflower like</td>
<td>8: Small (1-1.5cm) +, Mild, 5 Months</td>
<td>Inj Ivermectin tried</td>
</tr>
<tr>
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</tr>
<tr>
<td>WMP-26 December-2010 Bhim Tudu Govindapur, Salboni</td>
<td>ND Cow-3, ND HF-1, ND MC-1</td>
<td>ND MC-1, 8 Months</td>
<td>Neck and shoulder</td>
<td>Sessile type</td>
<td>14: Big size (3-4cm) ++++, Moderate, 5 Months</td>
<td>Inj Ivermectin tried</td>
</tr>
<tr>
<td>WMP-27 December-2010 Bhanai Pal Chandavilla, Salboni</td>
<td>ND Cow-4, ND BK-2, ND MC-2, ND FC-1</td>
<td>ND HF -1, 1.5 Years</td>
<td>Left axilla and left thigh</td>
<td>Grapes like stalked warts</td>
<td>n= 14: Big size (3-4cm) ++++, Moderate, 5 Months</td>
<td>Inj Ivermectin tried</td>
</tr>
<tr>
<td>WMP-28 December-2010 Goku i Priya Sarkar Chandavilla, Salboni</td>
<td>ND Cow-3, ND HF-1, ND MC-1</td>
<td>ND HF -1, 1.5 Years</td>
<td>Left axilla and left thigh</td>
<td>Grapes like stalked warts</td>
<td>n= 14: Big size (3-4cm) ++++, Moderate, 5 Months</td>
<td>Inj Ivermectin tried</td>
</tr>
<tr>
<td>WMP-29 December-2010 Raghunath Ghosh Chandavilla, Salboni</td>
<td>ND Cow-4, ND BK-2, ND MC-1, 8 Months</td>
<td>ND HF -1, 1.5 Years</td>
<td>Left axilla and left thigh</td>
<td>Grapes like stalked warts</td>
<td>n= 14: Big size (3-4cm) ++++, Moderate, 5 Months</td>
<td>Inj Ivermectin tried</td>
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<tr>
<td>WMP-30 December-2010 Kiriti Bhusan Ghosh, Chanda villa, Salboni</td>
<td>ND Cow-4, ND FC-2, Gir HF-1, ND BK-2</td>
<td>ND HF -1, 1.5 Years</td>
<td>Left axilla and left thigh</td>
<td>Grapes like stalked warts</td>
<td>n= 14: Big size (3-4cm) ++++, Moderate, 5 Months</td>
<td>Inj Ivermectin tried</td>
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<tr>
<td>WMP-31 December-2010 Fatik Bisoi Bhaodi, Salboni</td>
<td>ND Cow-4, ND BK-2, ND MC-2, ND FC-1</td>
<td>ND MC-1, 10 Months</td>
<td>Scrotal sac</td>
<td>Dome shaped non pedunculated warts</td>
<td>n= 5: Small (1-1.5cm) ++++, Mild, 4 Months</td>
<td>Inj Ivermectin tried</td>
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<tr>
<td>WMP-32 December-2010 Janardan Mandal Bhaodi, Salboni</td>
<td>ND Cow-2, ND HF-2, CBJ Cow-1</td>
<td>ND HF -1, 1.5 Years</td>
<td>Hind limbs</td>
<td>Mulbery like Squat type warts</td>
<td>n= 5: Small (1-1.5cm) ++++, Mild, 4 Months</td>
<td>Inj Ivermectin tried</td>
</tr>
<tr>
<td>WMP-33 December-2010 Nimai Mondal Radhanakni, Salboni</td>
<td>ND BK-2, ND Cow-4, ND MC-2</td>
<td>ND HF -1, 1.5 Years</td>
<td>Lumber and tail switch</td>
<td>Tag type</td>
<td>n= 15: Small (1-1.5cm) ++++, Moderate, 5 Months</td>
<td>Inj Ivermectin tried</td>
</tr>
<tr>
<td>WMP-34 December-2010 Chanchal Kumar Khan, Sidadihi, Salboni</td>
<td>ND BK-2, ND Cow-4, ND PC-2</td>
<td>ND BK-1, 3 Years</td>
<td>Eyes and ears, face and neck</td>
<td>Nodular non pedunculated</td>
<td>n= 15: Small (1-1.5cm) ++++, Moderate, 7 Months</td>
<td>Moderate, Inj Ivermectin tried</td>
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<tr>
<td>WMP-35 December-2010 Nepal Chandra Khan, Sidadihi, Salboni</td>
<td>CBJ Cow-1, CBJ HF-1, ND Cow-4, ND PC-2</td>
<td>CBJ HF-1, 2 Years</td>
<td>Fore limbs</td>
<td>Cauliflower like pedunculated warts</td>
<td>n= 25: Small (1-1.5cm) ++++, Moderate, 5 Months</td>
<td>Moderate, Inj Ivermectin tried</td>
</tr>
<tr>
<td>WMP-36 December-2010 Bachhu Kumar Ghosh, Chandabila</td>
<td>CBJ Cow-3, CBJ FC-2, ND Cow-2</td>
<td>CBJ HF-1, 2 Years</td>
<td>Head, neck and sternum</td>
<td>Sessile</td>
<td>n= 22: Small (1-1.5cm) ++++, Moderate, 5 Months</td>
<td>Inj Levamisole tried</td>
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<tr>
<td>WMP-37 December-2010 Nitya Ghosh, Chandabila</td>
<td>ND BK-2, ND Cow-4, ND HF-2</td>
<td>ND BK-1, 3 Years</td>
<td>Head, shoulder and back</td>
<td>Dome shaped</td>
<td>n= 24: Small (1-1.5cm) ++++, Moderate, 6 Months</td>
<td>Inj Levamisole tried</td>
</tr>
<tr>
<td>WMP-38</td>
<td>December-2010</td>
<td>Kasinath Pal, Kuralganj</td>
<td>Bovine: 8 ND BK-2, ND Cow-4, ND FC-2</td>
<td>ND BK-1, 3 Years</td>
<td>Shoulder and Right fore leg</td>
<td>Exophytic, elevated Nodular non pedunculated</td>
</tr>
<tr>
<td>WMP-39</td>
<td>December-2010</td>
<td>Sadhan Pal, Kuralganj</td>
<td>Bovine: 7 CBJ Cow-3, CBJ FC-2, ND Cow-2</td>
<td>CBJ HF-1, 2 Years</td>
<td>Back and belly</td>
<td>Bunch of grapes, non pedunculated</td>
</tr>
<tr>
<td>WMP-40</td>
<td>February-2011</td>
<td>Bina Ghosh, Noyari, Satbankura</td>
<td>Bovine: 5 ND Cow-3, Gir HF-2</td>
<td>Gir HF-1, 2 Years</td>
<td>Eyes and ear tips</td>
<td>Cauliflower like pedunculated</td>
</tr>
<tr>
<td>WMP-41</td>
<td>March-2011</td>
<td>Balai Dey, Radhanagar</td>
<td>Bovine: 4 ND Cow-2, ND MC-1, ND HF-1</td>
<td>ND MC, 14 Months</td>
<td>Limbs and belly</td>
<td>Small cauliflower like squat type warts</td>
</tr>
<tr>
<td>WMP-42</td>
<td>July-2011</td>
<td>Lakshman Shyamal, Tarua</td>
<td>Bovine: 8 CBJ Cow-3, CBJ FC-2, ND Cow-3</td>
<td>CBJ HF-1, 2 Years</td>
<td>Head and shoulder</td>
<td>Big cauliflower like warts</td>
</tr>
<tr>
<td>WMP-43</td>
<td>July-2011</td>
<td>Ashoke Kr Mahato, Donpashila, Daichakuria</td>
<td>Bovine: 4 ND Cow-2, ND MC-1, Gir HF-1</td>
<td>Gir HF-1, 2 Years</td>
<td>Peri-orbital and neck region</td>
<td>Hard horny small pedunculated warts</td>
</tr>
<tr>
<td>WMP-44</td>
<td>July-2011</td>
<td>BanamaliDundapat Donpashila, Daichakuria</td>
<td>Bovine: 7 ND Cow-3, ND MC-2, ND HF-2</td>
<td>ND MC-1, 14 Months</td>
<td>Hind limbs only</td>
<td>Dense vegetative stalked outgrowths</td>
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<tr>
<td>WMP-45</td>
<td>July-2011</td>
<td>Raghunath Murmu, Khatkhura, Jamboni</td>
<td>Bovine: 7 CBJ Cow-3, CBJ HF-2, ND Cow-2</td>
<td>CBJ HF-1, 2 Years</td>
<td>Peri aural and peri-orbital region</td>
<td>Small solid sessile warts</td>
</tr>
<tr>
<td>WMP-46</td>
<td>July-2011</td>
<td>Shanta Sil, Kunjabehariganj, Chandrakona-2</td>
<td>Bovine: 4 Gir Cow-2, Gir HF-1, ND Cow-1</td>
<td>Gir HF-1, 2 Years</td>
<td>Neck and inter scapular region</td>
<td>Small cauliflower like stalked warts</td>
</tr>
</tbody>
</table>

**Results**
Table 10: Breed, age group and sex wise synopsis of cutaneous wart (CWT) and teat papilloma (TP) in cattle and buffalo in West Midnapur District of West Bengal

<table>
<thead>
<tr>
<th>Breeds affected</th>
<th>Susceptible animal population in the affected herds</th>
<th>Total No. of clinical wart cases</th>
<th>Sex</th>
<th>Age group</th>
<th>No of CWT cases</th>
<th>No of TP cases</th>
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<tbody>
<tr>
<td>Indigenous and non-descript cattle</td>
<td>224</td>
<td>23</td>
<td>F-10</td>
<td>Calf hood</td>
<td>8</td>
<td>2</td>
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<td>M-13</td>
<td>Sub-adult</td>
<td>8</td>
<td>5</td>
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<tr>
<td>Cross breed cattle (CBJ)</td>
<td>82</td>
<td>23</td>
<td>F-23</td>
<td>Adult</td>
<td>18</td>
<td>22</td>
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<td></td>
<td></td>
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<td>M-0</td>
<td>Old</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Pure exotic cattle</td>
<td>-</td>
<td>-</td>
<td>F</td>
<td>-</td>
<td>-</td>
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<td>M</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Cross breed cattle (HLX)</td>
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<td>-</td>
<td>F</td>
<td>-</td>
<td>-</td>
<td>-</td>
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<td>Grand Total</td>
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Results | 107
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<tr>
<th>Sl No</th>
<th>Month of survey &amp; year</th>
<th>Owners name &amp; address</th>
<th>Species &amp; herd strength</th>
<th>Category of animal</th>
<th>Location of wart</th>
<th>Type of wart</th>
<th>No &amp; size</th>
<th>Severity of infection &amp; duration</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>EMP-1</td>
<td>January-2010</td>
<td>Kumed Paira, Shyamraibarh Jalpai, Junput, Contai</td>
<td>ND Cattle-6, Buffalo-nil</td>
<td>ND HF-1, 2 Years</td>
<td>Around neck, head and oral cavity</td>
<td>Hard, horny cauliflower like pedunculated warts</td>
<td>Multiple, n=18, 1-1.5 cm</td>
<td>Moderate, 4 Months</td>
<td>Thuja (mother tincture/ tried orally)</td>
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<tr>
<td>EMP-2</td>
<td>January-2010</td>
<td>Sukumar Jana Shyamraibarhjalpai, Junput,Contai</td>
<td>ND Cattle-7, Buffalo-nil</td>
<td>NDBK-1, 3 Years</td>
<td>Anterior thoracic and cervical region</td>
<td>Squat type warts</td>
<td>Multiple, n=15, Medium size (2-4 cm)</td>
<td>Moderate, 4 Months</td>
<td>Inj. Ivermectin</td>
</tr>
<tr>
<td>EMP-3</td>
<td>January-2010</td>
<td>Biswanath Jana, Shyamraibarhjalpai, Junput, Contai</td>
<td>ND Cattle-16, Buffalo-nil</td>
<td>NDMC-1, 10 Months</td>
<td>Skin of lower fore limbs and abdomen</td>
<td>Cauliflower like Pedunculated warts</td>
<td>Multiple, n=27, 1-2.5 cm</td>
<td>Moderate, 4 Months</td>
<td>Thuja (mother tincture) tried (orally)</td>
</tr>
<tr>
<td>EMP-4</td>
<td>January-2010</td>
<td>Prabhat Shit, Shyamraibarhalpai, Junput, Contai</td>
<td>NDCattle-8, Buffalo-2</td>
<td>ND FC-1, 11 Months</td>
<td>Extremities of all four limbs</td>
<td>Cauliflower like Pedunculated warts</td>
<td>Multiple, n=17, 1-1.5 cm</td>
<td>Moderate, 4 Months</td>
<td>Thuja tried (mother tincture) (orally)</td>
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<td>EMP-5</td>
<td>January-2010</td>
<td>Tapan Jana, Shyamraibarhalpai, Junput, Contai</td>
<td>ND Cattle-2,CBJ-3 Buffalo-nil</td>
<td>CBJHF-1, 2.5 Years</td>
<td>Left thigh and axilla</td>
<td>Small nodular, non pedunculated warts</td>
<td>Multiple, n=9, Medium size (2-3 cm)</td>
<td>Mild, 2 Months</td>
<td>Inj. Ivermectin by S/C route</td>
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<tr>
<td>EMP-6</td>
<td>January-2010</td>
<td>Gobindo Jana, Shyam Raibarh Jalpai, Junput, Contai</td>
<td>Cattle-4, Buffalo-2</td>
<td>NDBK-1, 3 Years</td>
<td>Around the anus and inguinal region</td>
<td>Tag type</td>
<td>Multiple, n=14, Medium size (2 cm)</td>
<td>Moderate, 4 Months</td>
<td>Thuja (mother tincture) tried (orally)</td>
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<tr>
<td>EMP-7</td>
<td>January-2010</td>
<td>Shib Shankar Jana Rangmalapur, Junput, Contai</td>
<td>ND-1 and CBJ-2, Total=3 Cattle, Buffalo-nil</td>
<td>ND Cow-1, 3 Years</td>
<td>Coronate, vulva and udder</td>
<td>Mixed type warts, round, oval and flat</td>
<td>Multiple, n=16, Medium size (2 cm)</td>
<td>Moderate, 4 Months</td>
<td>Left untreated</td>
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<tr>
<td>EMP-8</td>
<td>January-2010</td>
<td>Abanti Jana Rangmalapur, Junput, Contai</td>
<td>Cattle-5, Buffalo-nil</td>
<td>ND HF-1, 2.5 Years</td>
<td>Ventral surface of abdomen</td>
<td>Cauliflower like pedunculated</td>
<td>Multiple, n=17, 1-1.5 cm</td>
<td>Moderate, 4 Months</td>
<td>Treated by Thuja (mother tincture)</td>
</tr>
<tr>
<td>EMP-9</td>
<td>January-2010</td>
<td>Pulim Jana Rangmalapur, Junput Contai</td>
<td>Cattle-6, Buffalo-nil</td>
<td>ND BK-1,4 Years</td>
<td>Neck, body and back</td>
<td>Nodular non pedunculated</td>
<td>Multiple, n=8, 3-5 cm</td>
<td>Mild, 2 Months</td>
<td>Inj. Ivermectin by S/C route</td>
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<tr>
<td>EMP-10</td>
<td>January-2010</td>
<td>Sudhir Shit Rangmalapur, Junput Contai</td>
<td>Cattle-3, Buffalo-nil</td>
<td>ND HF-1, 3 Years</td>
<td>Head, cheeks and ears</td>
<td>Round, nodular squat type warts</td>
<td>Multiple, n=9, Medium size (3-5 cm)</td>
<td>Mild, 2 Months</td>
<td>Treated by Thuja (mother tincture)</td>
</tr>
<tr>
<td>EMP-11</td>
<td>January-2010</td>
<td>Atul Shit Rangmalapur, Junput Contai</td>
<td>Cattle-5, Buffalo-nil</td>
<td>ND MC-1, 10 Months</td>
<td>Eyes, ears and lower jaw</td>
<td>Small cauliflower like, pedunculated warts</td>
<td>Multiple, n=8,1.5-3 cm</td>
<td>Mild, 2 Months</td>
<td>Treated by Thuja (mother tincture)</td>
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<tr>
<td>EMP-12</td>
<td>January-2010</td>
<td>Kanai Shaw</td>
<td>Rangmalaput, Junput Contai</td>
<td>Cattle-7, Buffalo-nil</td>
<td>ND HF-1, 2 Years</td>
<td>Inner side of left foreleg</td>
<td>Round, nodular pedunculated warts</td>
<td>Multiple, n=14, Medium size (2-5 cm)</td>
<td>Moderate, 4 Months</td>
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<tr>
<td>EMP-13</td>
<td>January-2010</td>
<td>Arabindo Shaw</td>
<td>Rangmalaput, Junput Contai</td>
<td>Cattle-9, Buffalo-nil</td>
<td>ND BK-1,4 Years</td>
<td>Scrotum and inside the left thigh</td>
<td>Round, nodular squat type warts</td>
<td>Multiple, n=7, 2-3 cm</td>
<td>Mild, 2 Months</td>
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<tr>
<td>EMP-14</td>
<td>January-2010</td>
<td>Khudiram Pari</td>
<td>Rangmalaput, Junput Contai</td>
<td>Cattle-6, Buffalo-nil</td>
<td>ND HF-1, 2.5 Years</td>
<td>Hind limbs and flank</td>
<td>Flat type non pedunculated warts</td>
<td>Multiple, n=16, Medium size (2-4 cm)</td>
<td>Moderate, 4 Months</td>
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<tr>
<td>EMP-15</td>
<td>January-2010</td>
<td>Dipak Das</td>
<td>Rangmalaput, Junput Contai</td>
<td>Cattle-4, Buffalo-nil</td>
<td>ND MC-1, 10 Months</td>
<td>Fore limbs and chest region</td>
<td>Flat type non pedunculated warts</td>
<td>Multiple, n=27, 1-2.5 cm</td>
<td>Moderate, 4 Months</td>
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<tr>
<td>EMP-16</td>
<td>January-2010</td>
<td>Babulal Supker</td>
<td>Kamrup, Junput Contai</td>
<td>Cattle-6, Buffalo-nil</td>
<td>ND MC-1, 10 Months</td>
<td>Cheek, muzzle and rima-oris</td>
<td>Round, nodular squat type warts</td>
<td>Multiple, n=4, 1-3.5 cm</td>
<td>Mild, 2 Months</td>
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<tr>
<td>EMP-17</td>
<td>January-2010</td>
<td>Tarun Supker</td>
<td>Kamrup, Junput Contai</td>
<td>Cattle-6, Buffalo-nil</td>
<td>ND BK-1,4 Years</td>
<td>Hind limbs below the hoof</td>
<td>Round, nodular squat type warts</td>
<td>Multiple, n=7, 1-1.5 cm</td>
<td>Moderate, 4 Months</td>
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<tr>
<td>EMP-18</td>
<td>January-2010</td>
<td>Bimal Patra</td>
<td>Kamrup, Junput Contai</td>
<td>Cattle-8, Buffalo-nil</td>
<td>ND Cow-1, 3 Years</td>
<td>Head and ear base</td>
<td>Flat type non pedunculated warts</td>
<td>Multiple, n=7,3-3.5 cm</td>
<td>Mild, 2 Months</td>
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<tr>
<td>EMP-19</td>
<td>January-2010</td>
<td>Khokan Kundu</td>
<td>Kamrup, Junput Contai</td>
<td>ND Cattle-4, CBJ-2, Buffalo-nil</td>
<td>CBJ FC-1, 12 Months</td>
<td>Neck and eyelid</td>
<td>Squat type</td>
<td>Multiple, n=27, 1-1.5 cm</td>
<td>Moderate, 4 Months</td>
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<tr>
<td>EMP-20</td>
<td>January-2010</td>
<td>Pradip De</td>
<td>Kamrup, Junput Contai</td>
<td>ND Cattle-3, CBJ-2, Buffalo-nil</td>
<td>CBJ HF-1, 1.5 Year</td>
<td>Lower abdomen</td>
<td>Flat type non pedunculated warts</td>
<td>Multiple, n=7, 1-1.5 cm</td>
<td>Mild, 2 Months</td>
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<tr>
<td>EMP-21</td>
<td>January-2010</td>
<td>Gopal Kander</td>
<td>Kamrup, Junput Contai</td>
<td>ND Cattle-5, CBJ-2, Buffalo-nil</td>
<td>CBJ Bull calf-1, 11 Months</td>
<td>Fore limbs</td>
<td>Squat type</td>
<td>Multiple, n=57, 2-4 cm</td>
<td>Severe, 5 Months</td>
</tr>
<tr>
<td>EMP-22</td>
<td>January-2010</td>
<td>Sarbeswar Pradhan</td>
<td>Kamrup, Junput Contai</td>
<td>Cattle-3, Buffalo-nil</td>
<td>ND BK-1, 3 Years</td>
<td>Right hind limbs</td>
<td>Squat type</td>
<td>Multiple, n=12,3-4.5 cm</td>
<td>Moderate, 4 Months</td>
</tr>
<tr>
<td>EMP-23</td>
<td>January-2010</td>
<td>Anukul Giri</td>
<td>CBJ Cattle-1 and CBJ HF-1, 2.5 Year</td>
<td>Head, neck and</td>
<td>Flat type non pedunculated warts</td>
<td>Multiple, n=9, 3-4</td>
<td>Mild, 2 Months</td>
<td>Inj. Ivermectin by S/C</td>
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<td>EMP-24</td>
<td>January-2010</td>
<td>Kamarput, Junput, Contai</td>
<td>ND Cow-1, Buffalo-nil</td>
<td>Shoulder and loin</td>
<td>Squat type</td>
<td>Multiple, n=27, 4-5 cm</td>
<td>Moderate, 4 Months</td>
<td>Thuja tried (orally)</td>
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<td>EMP-25</td>
<td>January-2010</td>
<td>Pijush Kanti Bhuinia, Sanroybarh, Junput, Contai</td>
<td>Cattle-5, Buffalo-nil</td>
<td>ND MC-1, 12 Months</td>
<td>Thigh and buttock</td>
<td>Cauliflower like, pedunculated</td>
<td>Multiple, n=4, 3-5 cm</td>
<td>Mild, 2 Months</td>
<td>Left untreated</td>
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<tr>
<td>EMP-26</td>
<td>January-2010</td>
<td>Manas Metta, Sanroybarh, Junput, Contai</td>
<td>Cattle-6, Buffalo-nil</td>
<td>Whole body warts</td>
<td>Cauliflower like, pedunculated</td>
<td>Small (4-5 cm), n=68</td>
<td>Severe, 5 Months</td>
<td>Inj. Anthiomaline tried</td>
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<tr>
<td>EMP-27</td>
<td>January-2010</td>
<td>Balalal Das, Sanroybarh, Junput, Contai</td>
<td>ND Cattle-5, CBJ-2, Buffalo-nil</td>
<td>CBJ FC-1, 12 Months</td>
<td>Fore limbs</td>
<td>Cauliflower like, pedunculated</td>
<td>Multiple, n=7, 2-5 cm</td>
<td>Severe, 5 Months</td>
<td>Inj. Ivermectin by S/C route</td>
</tr>
<tr>
<td>EMP-28</td>
<td>January-2010</td>
<td>Kanai Kundu, Sanroybarh, Junput, Contai</td>
<td>Cattle-8, Buffalo-nil</td>
<td>CBJ FC-1, 12 Months</td>
<td>Lower legs</td>
<td>Flat type non pedunculated</td>
<td>Multiple, n=7, 2-2.5 cm</td>
<td>Severe, 5 Months</td>
<td>Inj Anthiomaline tried</td>
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<tr>
<td>EMP-29</td>
<td>January-2010</td>
<td>Gopal Bar, Sanroybarh, Junput, Contai</td>
<td>Cattle-6, Buffalo-nil</td>
<td>ND MC-1, 12 Months</td>
<td>Shoulder, limbs, neck and lumbar region</td>
<td>Cauliflower like, pedunculated</td>
<td>Multiple, n=47, 1-1.5 cm</td>
<td>Severe, 5 Months</td>
<td>Homeopathic remedy (Thuja 200X) tried</td>
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<tr>
<td>EMP-30</td>
<td>January-2010</td>
<td>Chittaranjan Barai, Sanroybarh, Junput, Contai</td>
<td>ND Cattle-1 and CBJ-3, Buffalo-nil</td>
<td>CBJ FC-1, 12 Months</td>
<td>Fore legs</td>
<td>Cauliflower like, pedunculated</td>
<td>Multiple, n=7, 2-3 cm</td>
<td>Moderate, 4 Months</td>
<td>Homeopathic remedy (Thuja 200X) tried</td>
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<tr>
<td>EMP-31</td>
<td>January-2010</td>
<td>Amiya Giri Haripur, Junput, Contai</td>
<td>Cattle-5, Buffalo-nil</td>
<td>ND MC-1, 10 Months</td>
<td>Shoulder, neck and lumbar region</td>
<td>Flat, non-pedunculated</td>
<td>Multiple, n=47, 3-4 cm</td>
<td>Severe, 5 Months</td>
<td>Inj Anthiomaline tried</td>
</tr>
<tr>
<td>EMP-32</td>
<td>January-2010</td>
<td>Animesh Jana Haripur, Junput, Contai</td>
<td>Cattle-6, Buffalo-nil</td>
<td>ND BK-1, 4 Years</td>
<td>Head, neck and back</td>
<td>Flat, non-pedunculated</td>
<td>Multiple, n=23, 2-4 cm</td>
<td>Moderate, 4 Months</td>
<td>Inj. Levamisole+Auto haemotherapy tried</td>
</tr>
<tr>
<td>EMP-33</td>
<td>January-2010</td>
<td>Prabhat Giri Haripur, Junput, Contai</td>
<td>Cattle-6, Buffalo-nil</td>
<td>ND MC-1, 10 Months</td>
<td>Shoulder, neck and lumbar region</td>
<td>Cauliflower like, pedunculated</td>
<td>Multiple, n=25, 1-3 cm</td>
<td>Moderate, 4 Months</td>
<td>Inj. Levamisole+Auto haemotherapy tried</td>
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<tr>
<td>EMP-34</td>
<td>January-2010</td>
<td>Ajay Giri Biramput, Junput, Contai</td>
<td>Cattle-9, Buffalo-nil</td>
<td>ND MC-1, 13 Months</td>
<td>Fore limbs</td>
<td>Cauliflower like, pedunculated</td>
<td>Multiple, n=20, 2-3 cm</td>
<td>Moderate, 4 Months</td>
<td>Thuja 200X orally</td>
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<tr>
<td>EMP-35</td>
<td>January-2010</td>
<td>Rejik Saha Biramput, Junput, Contai</td>
<td>Cattle-6, Buffalo-nil</td>
<td>ND HF-1, 3 Years</td>
<td>Whole body papillomatosis</td>
<td>Cauliflower like, pedunculated</td>
<td>Multiple, n=39, 2-4 cm</td>
<td>Severe, 5 Months</td>
<td>Inj Anthiomaline tried</td>
</tr>
<tr>
<td>EMP-36</td>
<td>January-2010</td>
<td>Asgar Ali Biramput, Junput, Contai</td>
<td>Cattle-2, Buffalo-nil</td>
<td>ND BK-1, 4 Years</td>
<td>Right ear base and face</td>
<td>Flat, non-pedunculated</td>
<td>Multiple, n=21, 1-3 cm</td>
<td>Moderate, 4 Months</td>
<td>Homeopathic remedy (Thuja 200X) tried</td>
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<tr>
<td>EMP</td>
<td>Month-Year</td>
<td>Name</td>
<td>Location</td>
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<tr>
<td>EMP-37</td>
<td>January-2010</td>
<td>Seikh Abdul</td>
<td>Biramput, Junput Contai</td>
<td>Cattle-6, Buffalo-nil</td>
<td>ND HF-1, 2.5</td>
<td>Neck and fore limbs</td>
<td>Cauliflower like, pedunculated</td>
<td>Multiple, n = 19, 2-3 cm</td>
<td>Moderate, 4 Months</td>
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<tr>
<td>EMP-38</td>
<td>January-2010</td>
<td>Sheikh Naser</td>
<td>Biramput, Junput Contai</td>
<td>Cattle-5, Buffalo-nil</td>
<td>ND HF-1, 2 Years</td>
<td>Limbs and trunk</td>
<td>Cauliflower like, pedunculated</td>
<td>Multiple, n = 27, 2-4 cm</td>
<td>Moderate, 4 Months</td>
</tr>
<tr>
<td>EMP-39</td>
<td>January-2010</td>
<td>Mainuddin Saha</td>
<td>Biramput, Junput Contai</td>
<td>Cattle-4, Buffalo-nil</td>
<td>ND HF-1, 3 Years</td>
<td>Paragenital (around the vulva)</td>
<td>Nodular squat warts</td>
<td>Multiple, n = 1-2 cm</td>
<td>Moderate, 4 Months</td>
</tr>
<tr>
<td>EMP-40</td>
<td>January-2010</td>
<td>Dasarath Mandal</td>
<td>Biramput, Junput Contai</td>
<td>ND Cattle-4 and CBJ-1, Buffalo-nil</td>
<td>CBJ Cow-1, 3 Years</td>
<td>Teats only</td>
<td>Small, frond type (Flat, non-pedunculated)</td>
<td>Multiple, n = 18, 2-3 cm</td>
<td>Moderate, 4 Months</td>
</tr>
<tr>
<td>EMP-41</td>
<td>January-2010</td>
<td>Kalipada Bera</td>
<td>Biramput, Junput Contai</td>
<td>ND Cattle-4 and CBJ-2, Buffalo-nil</td>
<td>CBJ Cow-1, 3 Years</td>
<td>Teats and udder</td>
<td>Rice grain type</td>
<td>Multiple, n = 21, 1-1.5 cm</td>
<td>Moderate, 4 Months</td>
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<tr>
<td>EMP-42</td>
<td>January-2010</td>
<td>Raichand Maity</td>
<td>Biramput, Junput Contai</td>
<td>ND-3 Cattle and CBJ-1-4, Buffalo-nil</td>
<td>CBJ Cow-1, 2 Years</td>
<td>Hind legs and axilla</td>
<td>Flat, non-pedunculated</td>
<td>Multiple, n = 21, 2-3 cm</td>
<td>Moderate, 4 Months</td>
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<tr>
<td>EMP-43</td>
<td>January-2010</td>
<td>Gunadhur Singha</td>
<td>Biramput, Junput Contai</td>
<td>Cattle-8, Buffalo-nil</td>
<td>ND BK-1, 2.5</td>
<td>Shoulder and right fore limb</td>
<td>Nodular squat warts</td>
<td>Multiple, n = 21, 1-1.5 cm</td>
<td>Moderate, 4 Months</td>
</tr>
<tr>
<td>EMP-44</td>
<td>January-2010</td>
<td>Ajay Mali</td>
<td>Biramput, Junput Contai</td>
<td>Cattle-6, Buffalo-nil</td>
<td>ND BK-1, 3.5</td>
<td>Back and sides of barrel</td>
<td>Nodular squat warts</td>
<td>Multiple, n = 21, 2-5 cm</td>
<td>Moderate, 4 Months</td>
</tr>
<tr>
<td>EMP-45</td>
<td>January-2010</td>
<td>Haripada Jana</td>
<td>Biramput, Junput Contai</td>
<td>ND Cattle-4 and CBJ-2, Buffalo-nil</td>
<td>CBJ Cow-1, 4 years</td>
<td>Teats only</td>
<td>Rice grain type</td>
<td>Multiple, n = 12,0.5-1 cm</td>
<td>Moderate, 4 Months</td>
</tr>
<tr>
<td>EMP-46</td>
<td>April-2011</td>
<td>Bino Bera</td>
<td>Dahadya, Alankarpur East Midnapur</td>
<td>ND Cattle-3 and CBJ-2, Buffalo-nil</td>
<td>CBJ Cow-1, 4 years</td>
<td>Teats only</td>
<td>Diffuse frond type</td>
<td>Multiple, n = 12,1.5-2 cm</td>
<td>Moderate, 4 Months</td>
</tr>
<tr>
<td>EMP-47</td>
<td>April-2011</td>
<td>Bhabesh Bera</td>
<td>Dahadya, Alankarpur East Midnapur</td>
<td>Cattle-10, Buffalo-nil</td>
<td>ND BK-1, 4 Years</td>
<td>Head and neck</td>
<td>Flat, non-pedunculated</td>
<td>Multiple, n = 21, 2-5 cm</td>
<td>Moderate, 4 Months</td>
</tr>
<tr>
<td>EMP-48</td>
<td>April-2011</td>
<td>Ashutosh Bera</td>
<td>ND Cattle-4 and CBJ Cow-1, 4 years</td>
<td>Teats only(All four)</td>
<td>Diffuse frond type</td>
<td>Multiple, n = 21, 2-5 cm</td>
<td>Thuya 200X oral therapy</td>
<td>Moderate, 4</td>
<td>Thuya 200X oral therapy</td>
</tr>
</tbody>
</table>
| EMP | Date | Name | Place | Animals | Warts | Type | Size | Duration | Treatment
|-----|------|------|-------|---------|-------|------|------|----------|--------|
| EMP-49 | April-2011 | Benu Sin | Kashipur, Paya Medinipur, Digha | ND Cattle-5 and CBJ-2, Buffalo-nil | Teats only | Rice grain type | Multiple, n = 12,0.5-2 cm | Months | InjAntihiomalone tried
| EMP-50 | April-2011 | Ananda Sin | Kashipur, Paya Medinipur, Digha | Cattle-4, Buffalo-nil | Fore limbs and shoulder | Nodular squat type warts | Multiple, n = 15,0.5-2 cm | Months | Levamisole orally +Auto haemotherapy tried
| EMP-51 | April-2011 | Dhiren Nayak | Jyashipur, Bodhra, Ramnagar | Cattle-6, Buffalo-nil | Head, neck and right lower limb | Squat type warts | Multiple, n = 22,1-3 cm | Months | Thuja 200X oral therapy
| EMP-52 | April-2011 | Basanta Adhikari | Jyashipur, Bodhra, Ramnagar | ND BK-1, 4 Years | Para orbital | Dome shaped warts | Multiple, n =12,1.5-2 cm | Months | Thuja -200X orally
| EMP-53 | April-2011 | Eeswar Patra | Jyashipur, Bodhra, Ramnagar | ND Cattle-5, and CBJ-1, Buffalo-nil | Teats only | Rice grain type | Multiple, n = 16,0.5cm | Months | Levamisole orally +Auto haemotherapy tried
| EMP-54 | April-2011 | Subodh Maity | Jyashipur, Bodhra, Ramnagar | ND HF-1, 2 Years | Para genital and axillae | Nodular squat type warts | Multiple, n =22,0.5-2 cm | Months | Thuja -200X orally
| EMP-55 | April-2011 | Asoke Maity | Lachimpur, Bodhra, Ramnagar | ND Cattle-2 and CBJ-1, Buffalo-nil | Teats only | Diffuse frond type | Multiple, n =7, 0.5cm | Months | Levamisole orally +Auto haemotherapy tried
| EMP-56 | April-2011 | Madhab De | Lachimpur, Bodhra, Ramnagar | Cattle-6, Buffalo-nil | Belly( right side) | Big cauliflower like pedunculated warts | Single, solitary (3cm) | Months | Surgical excision done
| EMP-57 | April-2011 | Ratan Senapati | Dalbalda, Bodhra, Ramnagar | ND HF-1, 2 Years | Shoulder and right fore limb | Small cauliflower like warts | Multiple, n=12,1.5-2 cm | Months | Thuja -200X orally
| EMP-58 | April-2011 | Amlan Nayak | Dalbalda, Bodhra, Ramnagar | Cattle-6, Buffalo-nil | Teat crest | Rice grain type | Multiple, n=14,0.5-1 cm | Months | Levamisole orally +Auto haemotherapy tried
| EMP-59 | April-2011 | Susanta Panda | Dalbalda, Bodhra, Ramnagar | ND Cattle-6 and CBJ-2, Buffalo-nil | Teats only | Rice grain type | Multiple, n=7,0.5-1 cm | Months | Thuja -200X orally
| EMP-60 | April-2011 | Swapan Gir | Talkantalia, Balishai,Digha | Cattle-4, Buffalo-nil | Shoulder and right fore limb | Small cauliflower like, pedunculated warts | Multiple, n=8,0.5-1 cm | Months | Inj. Ivermectin by S/C route
| EMP-61 | April-2011 | Anadi Shi | Talkantalia, Balishai, Digha | ND HF-1, 2 Years | Head and shoulder | Small cauliflower like, pedunculated warts | Multiple, n=18,1.5-3 cm | Months | Thuja -200X orally
| EMP-62 | April-2011 | Santosh Patra | Talkantalia, Balishai, Digha | ND Cattle-4 and CBJ-3, Buffalo-nil | Eyes and ears | Hard, horny squat type warts | Multiple, n=23,2-5 cm | Months | Thuja -200X orally

Results | 112
<table>
<thead>
<tr>
<th>EMP</th>
<th>Month</th>
<th>Cow Name</th>
<th>Village</th>
<th>Host</th>
<th>Disease</th>
<th>Age</th>
<th>Location</th>
<th>Type</th>
<th>Size</th>
<th>Mode</th>
<th>Duration</th>
<th>Treatment</th>
<th>Result</th>
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<tbody>
<tr>
<td>EMP-63</td>
<td>April-2011</td>
<td>Sattyaranjan Jana</td>
<td>Karanjee, Balisai, Digha</td>
<td>Cattle-6, Buffalo-nil</td>
<td>ND HF-1, 2 Years</td>
<td>Head, face and ears</td>
<td>Small cauliflower like, pedunculated warts</td>
<td>Multiple, n=17,2-3 cm</td>
<td>Moderate, 4 Months</td>
<td>Thuja -200X orally</td>
<td></td>
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<tr>
<td>EMP-64</td>
<td>April-2011</td>
<td>Debiprasad Jana</td>
<td>Karanjee, Balisai, Digha</td>
<td>ND Cattle-6 and CBJ-2, Buffalo-nil</td>
<td>CBJ Cow-1, 4 years</td>
<td>Ears and fore limbs</td>
<td>Small sessile type</td>
<td>Multiple, n=6,0.5 2 cm</td>
<td>Mild, 3 Months</td>
<td>Thuja -200X orally</td>
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<tr>
<td>EMP-65</td>
<td>April-2011</td>
<td>Prabhnanjan Jana</td>
<td>Karanjee, Balisai, Digha</td>
<td>Cattle-6, Buffalo-nil</td>
<td>ND HF-1, 3 Years</td>
<td>Peri anal and lumbar</td>
<td>Hard, horny squat type warts</td>
<td>Multiple, n=7,0.5 – 3 cm</td>
<td>Mild, 3 Months</td>
<td>Levamisole orally + Auto haemotherapy tried</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EMP-66</td>
<td>April-2011</td>
<td>Khagendra Bera</td>
<td>Gopalpur, Gopalchak, Ramnagar</td>
<td>ND Cattle-2 and CBJ-1, Buffalo-nil</td>
<td>CBJ HF-1, 1.5 Years</td>
<td>Limbs and trunk</td>
<td>Small cauliflower like pedunculated warts</td>
<td>Multiple, n=15,0.5 cm</td>
<td>Moderate, 4 Months</td>
<td>Levamisole orally + Auto haemotherapy tried</td>
<td></td>
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<tr>
<td>EMP-67</td>
<td>April-2011</td>
<td>Surendra Bera</td>
<td>Gopalpur, Gopalchak, Ramnagar</td>
<td>ND Cattle-4 and CBJ-2, Buffalo-nil</td>
<td>CBJ HF-1, 1.5 Years</td>
<td>Peri orbital area and ear tips</td>
<td>Small sessile type</td>
<td>Multiple, n=27,0.5 -2cm</td>
<td>Moderate, 4 Months</td>
<td>Thuja 200X tried (orally)</td>
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<tr>
<td>EMP-68</td>
<td>April-2011</td>
<td>Ganesh Bera</td>
<td>Gopalpur, Gopalchak, Ramnagar</td>
<td>Cattle-9, Buffalo-nil</td>
<td>ND HF-1, 2 Years</td>
<td>Fore limbs only</td>
<td>Small cauliflower like pedunculatedwarts</td>
<td>Multiple, n=37,2-3 cm</td>
<td>Moderate, 4 Months</td>
<td>Inj. Levamisole + Auto haemotherapy tried</td>
<td></td>
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</tr>
<tr>
<td>EMP-69</td>
<td>April-2011</td>
<td>Tapas Maiti</td>
<td>Bilamaria, Payamedinipur, Digha</td>
<td>ND Cattle-3 and CBJ-2, Buffalo-nil</td>
<td>CBJ HF-1, 1.5 Years</td>
<td>Hind limbs and base of the tail</td>
<td>Small cauliflower like pedunculatedwarts</td>
<td>Multiple, n=17,1-2 cm</td>
<td>Moderate, 4 Months</td>
<td>Inj. Levamisole + Auto haemotherapy tried</td>
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<tr>
<td>EMP-70</td>
<td>April-2011</td>
<td>Debu Pal</td>
<td>Bilamaria, Payamedinipur, Digha</td>
<td>Cattle-6, Buffalo-nil</td>
<td>ND HF-1, 2 Years</td>
<td>Chest, barrel and elbow</td>
<td>Small cauliflower like warts</td>
<td>Multiple,n = 22,2-3 cm</td>
<td>Moderate, 4 Months</td>
<td>Inj. Levamisole + Auto haemotherapy tried</td>
<td></td>
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</tr>
<tr>
<td>EMP-71</td>
<td>April-2011</td>
<td>Nani Patra</td>
<td>Bilamaria, Payamedinipur, Digha</td>
<td>Cattle-3, Buffalo-nil</td>
<td>ND HF-1, 2.5 Years</td>
<td>Para orbital and fore limbs</td>
<td>Small sessile type</td>
<td>Multiple, n=17,0.5 – 2 cm</td>
<td>Moderate, 4 Months</td>
<td>Inj. Levamisole + Auto haemotherapy tried</td>
<td></td>
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<tr>
<td>EMP-72</td>
<td>April-2011</td>
<td>Biswanath Shyamal</td>
<td>Bilamaria, Payamedinipur, Digha</td>
<td>Cattle-6, Buffalo-nil</td>
<td>ND BK-1, 3 Years</td>
<td>Neck and thorax</td>
<td>Hard, horny squat type warts</td>
<td>Multiple, n = 27,3-5cm</td>
<td>Moderate, 4 Months</td>
<td>Inj. Levamisole + Auto haemotherapy tried</td>
<td></td>
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<tr>
<td>EMP-73</td>
<td>April-2011</td>
<td>Ganesh Senapati</td>
<td>Bilamaria, Payamedinipur, Digha</td>
<td>Cattle-5, Buffalo-2</td>
<td>ND HF-1, 2.5 Years</td>
<td>Limbs and body</td>
<td>Hard, horny squat type warts</td>
<td>Multiple, n =18, 1-1.5 cm</td>
<td>Moderate, 4 Months</td>
<td>Thuja -200X orally</td>
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<tr>
<td>EMP-74</td>
<td>April-2011</td>
<td>Suprakash Patra</td>
<td>Jaldha, Bodhra, Digha</td>
<td>Cattle-7, Buffalo-nil</td>
<td>ND HF-1, 3 Years</td>
<td>Lower limbs and ear tips</td>
<td>Small cauliflower like warts</td>
<td>Multiple, n = 17, 1.5-3 cm</td>
<td>Moderate, 4 Months</td>
<td>Thuja -200X orally</td>
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<tr>
<td>EMP-75</td>
<td>April-2011</td>
<td>Kalipada Acharya</td>
<td>Jaldha, Bodhra, Digha</td>
<td>Cattle-4, Buffalo-nil</td>
<td>ND BK-1, 3 Years</td>
<td>Perianal region and left hind thigh</td>
<td>Small cauliflower like warts</td>
<td>Multiple, n = 15, 2-3cm</td>
<td>Moderate, 4 Months</td>
<td>Inj. Levamisole tried</td>
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<tr>
<td>EMP</td>
<td>Date</td>
<td>Cattle Type</td>
<td>Breed</td>
<td>Age</td>
<td>Location</td>
<td>Affected Area</td>
<td>Type</td>
<td>Count</td>
<td>Size</td>
<td>Duration</td>
<td>Treatment</td>
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<tr>
<td>EMP-76</td>
<td>April-2011</td>
<td>Cattle-3, Buffalo-nil</td>
<td>ND HF-1, 3 Years</td>
<td>Neck and thorax</td>
<td>Small sessile type</td>
<td>Multiple, n = 12, 1-1.5 cm</td>
<td>Moderate, 4 Months</td>
<td>Thuja -200X orally</td>
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<tr>
<td>EMP-77</td>
<td>April-2011</td>
<td>Cattle-6, Buffalo-nil</td>
<td>ND BK-1, 3 Years</td>
<td>Neck and thorax</td>
<td>Warts as if bunches of grapes</td>
<td>Multiple, n = 13, 1-1.5 cm</td>
<td>Moderate, 4 Months</td>
<td>Inj. Levamisole tried</td>
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<tr>
<td>EMP-78</td>
<td>April-2011</td>
<td>Cattle-5, Buffalo-nil</td>
<td>ND HF-1, 2 Years</td>
<td>Lower limbs and ear tips</td>
<td>Cauliflower like pedunculated warts</td>
<td>Multiple, n = 20, 1-2 cm</td>
<td>Moderate, 4 Months</td>
<td>Inj. Levamisole tried</td>
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<tr>
<td>EMP-79</td>
<td>April-2011</td>
<td>Cattle-11, Buffalo-nil</td>
<td>ND HF-1, 3 Years</td>
<td>Lower limbs and ear tips</td>
<td>Small, sessile type warts</td>
<td>Multiple, n = 22, 1-1.5 cm</td>
<td>Moderate, 4 Months</td>
<td>Thuja -200X orally</td>
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<tr>
<td>EMP-80</td>
<td>April-2011</td>
<td>Cattle-6, Buffalo-nil</td>
<td>ND BK-1, 3 Years</td>
<td>Perinium and left hind thigh</td>
<td>Small cauliflower like warts</td>
<td>Multiple, n = 12, 1-1.5 cm</td>
<td>Moderate, 4 Months</td>
<td>Thuja -200X orally</td>
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<tr>
<td>EMP-81</td>
<td>April-2011</td>
<td>Cattle-4, Buffalo-nil</td>
<td>ND HF-1, 2.5 Years</td>
<td>Neck and thorax</td>
<td>Cauliflower like pedunculated warts</td>
<td>Multiple, n = 12, 2-2.5 cm</td>
<td>Moderate, 4 Months</td>
<td>Homeopathic remedy (Thuja by S/C route)</td>
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<td>EMP-82</td>
<td>April-2011</td>
<td>Cattle-6, Buffalo-nil</td>
<td>ND HF-1, 3 Years</td>
<td>Neck and thorax</td>
<td>Cauliflower like pedunculated warts</td>
<td>Multiple, n = 12, 3-5 cm</td>
<td>Moderate, 4 Months</td>
<td>Thuja -200X orally</td>
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<td>EMP-83</td>
<td>April-2011</td>
<td>Cattle-6, Buffalo-nil</td>
<td>ND BK-1, 3 Years</td>
<td>Ear pina and neck</td>
<td>Cauliflower like</td>
<td>Multiple, n=17, 1-1.5 cm</td>
<td>Moderate, 6 Months</td>
<td>Inj. Levamisole tried</td>
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<tr>
<td>EMP-84</td>
<td>April-2011</td>
<td>Cattle-5, Buffalo-nil</td>
<td>ND BK-1, 3 Years</td>
<td>Neck and thorax</td>
<td>Cauliflower type</td>
<td>Multiple, n=12, 1-1.5 cm</td>
<td>Moderate, 3 Months</td>
<td>Inj. Levamisole tried</td>
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<tr>
<td>EMP-85</td>
<td>April-2011</td>
<td>Cattle-4, Buffalo-nil</td>
<td>Desi FC-1, 9 Months</td>
<td>Scattered throughout the body</td>
<td>Cauliflower type</td>
<td>Whole body warts, n = 54, 1-1.5 cm</td>
<td>Severe, 4 Months</td>
<td>Inj. Levamisole tried</td>
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<tr>
<td>EMP-86</td>
<td>April-2011</td>
<td>Cattle-6, Buffalo-nil</td>
<td>Desi HF-1, 18 Months</td>
<td>Face only</td>
<td>Cauliflower type</td>
<td>Multiple, n = 12, 1-1.5 cm</td>
<td>Moderate, 5 Months</td>
<td>Inj. Levamisole tried</td>
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<tr>
<td>EMP-87</td>
<td>Jan-2012</td>
<td>Cattle-9, Buffalo-2</td>
<td>CBJ HF-1, 2 Years</td>
<td>Head, neck and thorax</td>
<td>Squat type</td>
<td>Multiple, n = 20, 2-3 cm</td>
<td>Moderate, 6 Months</td>
<td>Inj. Anthiomaline administered</td>
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<td>EMP-88</td>
<td>March-2012</td>
<td>Cattle-4, Buffalo-2</td>
<td>ND MC-1, 11 Months</td>
<td>Facial region only</td>
<td>Sessile type</td>
<td>Multiple, n = 12, 1-1.5 cm</td>
<td>Moderate, 3 Months</td>
<td>Inj. Anthiomaline administered</td>
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Table 12: Breed, age group and sex wise synopsis of cutaneous wart (CWT) and teat papilloma (TP) in cattle and buffalo in East Midnapur District of Bengal

<table>
<thead>
<tr>
<th>Breeds affected</th>
<th>Susceptible animal population in the affected herds</th>
<th>Total No. of clinical wart cases</th>
<th>Sex</th>
<th>Age group</th>
<th>No of CWT cases</th>
<th>No of TP cases</th>
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</thead>
<tbody>
<tr>
<td>Indigenous and non-descript cattle</td>
<td>458</td>
<td>62</td>
<td>F-33</td>
<td>Sub-adult</td>
<td>2</td>
<td>33</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>M-29</td>
<td>Adult</td>
<td>10</td>
<td>29</td>
</tr>
<tr>
<td>Cross breed cattle (CBJ)</td>
<td>51</td>
<td>26</td>
<td>F-25</td>
<td>Adult</td>
<td>15</td>
<td>10</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>M-1</td>
<td>Old</td>
<td>-</td>
<td>N/A</td>
</tr>
<tr>
<td>Cross breed cattle (PJ)</td>
<td>-</td>
<td>-</td>
<td>F</td>
<td>Sub-adult</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>M</td>
<td>Adult</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Cross breed cattle (HLX)</td>
<td>-</td>
<td>-</td>
<td>F</td>
<td>Sub-adult</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>M</td>
<td>Adult</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Buffalo</td>
<td>10</td>
<td>-</td>
<td>F</td>
<td>Sub-adult</td>
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</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>M</td>
<td>Adult</td>
<td>-</td>
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</tr>
<tr>
<td>Grand Total</td>
<td>519</td>
<td>88</td>
<td>F-58</td>
<td>Adult</td>
<td>78</td>
<td>10</td>
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<td></td>
<td></td>
<td></td>
<td>M-30</td>
<td>Old</td>
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Table-13: Field level survey on spontaneous cases of bovine papillomatosis in the District of Howrah, West Bengal

<table>
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<th>Sl No</th>
<th>Period of survey</th>
<th>Farmer’s name and address</th>
<th>Herd strength</th>
<th>Species affected</th>
<th>Category of animals</th>
<th>Distribution and wart types</th>
<th>Number &amp; size</th>
<th>Duration of infection</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>HWH-1</td>
<td>June-2009</td>
<td>Biswajit Mondal, Uluberia</td>
<td>Cattle-11: ND Cow-6, Gir HF-2, CBJ HF-2, CBJ MC-1</td>
<td>cattle</td>
<td>CBJ HF-1, 2.5 Years</td>
<td>Cauliflower like pedunculated warts on head, neck and belly</td>
<td>n = 20, 2-4 cm</td>
<td>6 months</td>
<td>++++, Moderate, Levamisole oral therapy</td>
</tr>
<tr>
<td>HWH-2</td>
<td>June-2009</td>
<td>Sulekha Duari, Latibpur</td>
<td>Cattle-7: ND Cow-4, ND FC-2, ND HF-1</td>
<td>cattle</td>
<td>ND Cow-1, 4 Years</td>
<td>Pea shaped warts on all four teats</td>
<td>n = 7, 1-1.5 cm</td>
<td>3 months</td>
<td>+, Mild, Thuja orally</td>
</tr>
<tr>
<td>HWH-3</td>
<td>June-2009</td>
<td>Shyam Sundar Adhikary, Bahirtafa, Jadubera</td>
<td>Cattle-5: ND Cow-2, ND HF-1, CBJ HF-2</td>
<td>cattle</td>
<td>CBJ HF-1, 2.0 Years</td>
<td>Round dome shaped non pedunculated warts on right shoulder and right fore limb</td>
<td>n =12, 2-3 cm</td>
<td>6 months</td>
<td>++++, Moderate, Levamisole orally</td>
</tr>
<tr>
<td>HWH-4</td>
<td>June-2009</td>
<td>Bapi Dhula Uluberia</td>
<td>Cattle-4: HLX Cow-1, HLX HF-2, HLX MC-1</td>
<td>cattle</td>
<td>HLX HF-1, 2.5 Years</td>
<td>Bunch of grapes like squat type warts on neck</td>
<td>n = 18, 3-4 cm</td>
<td>6 months</td>
<td>++++, Moderate, Inj. Ivermectin tried</td>
</tr>
<tr>
<td>HWH-5</td>
<td>June-2009</td>
<td>Dip Senapati Brindabanpur</td>
<td>Cattle-7: ND Cow-2, ND HF-1, CBJ FC-2</td>
<td>cattle</td>
<td>CBJ HF-1, 3 Years</td>
<td>Round and dome shaped sessile type warts on neck and shoulder</td>
<td>n=20, 1-3 cm</td>
<td>5 months</td>
<td>++++, Moderate, Levamisole oral therapy</td>
</tr>
<tr>
<td>HWH-6</td>
<td>June-2009</td>
<td>Kush Kumar Hajra Basudebpur</td>
<td>Cattle-7: ND Cow-4, ND HF-2, ND MC-1</td>
<td>cattle</td>
<td>ND MC-1, 11 Months</td>
<td>Numerous nodular (non pedunculated) warts on all four limbs and thorax</td>
<td>n&gt;50,1-2 cm</td>
<td>3 months</td>
<td>++++, Severe Inj. Anthiomaline</td>
</tr>
<tr>
<td>HWH-7</td>
<td>June-2009</td>
<td>Prajwala Hajra Basudebpur</td>
<td>Cattle-7: ND Cow-2, HLX Cow-2, HLX HF-2, HLX MC-1</td>
<td>cattle</td>
<td>Crossbred heifer (HLX HF-1), 3 Years</td>
<td>Dome shaped warts on lumber region and tail base</td>
<td>n = 18, 3-4 cm</td>
<td>5 months</td>
<td>++++, Moderate, Levamisole oral therapy</td>
</tr>
<tr>
<td>HWH-8</td>
<td>June-2009</td>
<td>Debasis Gayen Uluberia</td>
<td>Cattle-7: ND Cow-4, ND HF-2, ND MC-1</td>
<td>Cattle</td>
<td>ND MC-1, 12 Months</td>
<td>Cauliflower like pedunculated warts on head, neck, eyes and fore limbs</td>
<td>n = 30, 2-3 cm</td>
<td>3 months</td>
<td>++++, Moderate, Levamisole orally</td>
</tr>
<tr>
<td>HWH-9</td>
<td>June-2009</td>
<td>Md. Giasuddin Gazipur</td>
<td>Cattle-7: ND Cow-2, CBJ Cow-1, CBJ FC-1 Buffalo-4</td>
<td>Cattle</td>
<td>CBJ HF-1, 2 Years</td>
<td>Dome shaped, round non pedunculated warts below neck</td>
<td>n = 16, 1-1.5 cm</td>
<td>2 months</td>
<td>++++, Moderate, Levamisole orally</td>
</tr>
<tr>
<td>HWH-10</td>
<td>June-2009</td>
<td>Sanat Bag Bedubi</td>
<td>Cattle-4: CBJ Cow-2, CBJ FC-2</td>
<td>Cattle</td>
<td>CBJ cow-1, 4 Years</td>
<td>Flat and round non pedunculated warts, above the left eye</td>
<td>n=6, 2 cm</td>
<td>3 months</td>
<td>+, Mild, Inj. Ivermectin tried</td>
</tr>
<tr>
<td>HWH-11</td>
<td>July-2010</td>
<td>Tapas Bhura Harishpur</td>
<td>Cattle-3: CBJ Cow-2, CBJ MC-1</td>
<td>Cattle</td>
<td>CBJ MC-1, 10 Months</td>
<td>Cauliflower-like warts on fore head and right fore leg</td>
<td>n = 15, 2 cm</td>
<td>3 months</td>
<td>++++, Moderate, Levamisole oral therapy</td>
</tr>
<tr>
<td>HWH-12</td>
<td>July-2010</td>
<td>Bimal Gayen Chamaril</td>
<td>Cattle-7: ND Cow-4, CBJ Cow-1, CBJ FC-2 Buffalo BK-2</td>
<td>Cattle</td>
<td>CBJ FC-1, 10 Months</td>
<td>Dome shaped warts above the nostril</td>
<td>n = 4, 1.5cm-2 cm</td>
<td>5 months</td>
<td>+, Mild, Thuja orally</td>
</tr>
<tr>
<td>HWH-13</td>
<td>July-2010</td>
<td>Mahadev Modak Govindapur</td>
<td>Cattle-8: ND Cow-3, ND HF-2, CBJ HF-2, CBJ FC-1</td>
<td>cattle</td>
<td>CBJ HF-1, 2.5 Years</td>
<td>Pedunculated warts on neck and fore limbs</td>
<td>n = 21, 3-5 cm</td>
<td>4 months</td>
<td>++++, Moderate, Levamisole oral therapy</td>
</tr>
<tr>
<td>HWH-14</td>
<td>July-2010</td>
<td>Shyamal Mandal Govindapur</td>
<td>Cattle-7: ND Cow-3, ND HF-2, ND MC-2</td>
<td>Cattle</td>
<td>ND MC-1, 9 Months</td>
<td>Nodular non pedunculated warts on face, neck and back</td>
<td>n = 8, 3-4 cm</td>
<td>3 months</td>
<td>+, Mild, Thuja orally</td>
</tr>
<tr>
<td>Case</td>
<td>Date</td>
<td>Investigator</td>
<td>Species</td>
<td>Lesion Description</td>
<td>Tissue Type</td>
<td>Number</td>
<td>Dimensions</td>
<td>Duration</td>
<td>Treatment</td>
</tr>
<tr>
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</tr>
<tr>
<td>HWH-15</td>
<td>July-2010</td>
<td>Tapan Hajra Begri</td>
<td>Cattle-6: CBJ Cow-3, CBJ FC-2, CBJ HF-1</td>
<td>Cattle</td>
<td>CBJ HF-1, 3 Years</td>
<td>Small cauliflower like pedunculated warts on neck, dewlap and left fore limb</td>
<td>n = 23, 3-5 cm</td>
<td>4 months</td>
<td>+++ , Moderate, Levamisole orally</td>
</tr>
<tr>
<td>HWH-16</td>
<td>July-2010</td>
<td>Panchanan Ghosh Pancharul</td>
<td>Cattle-8: ND Cow-4, CBJ HF-3, CBJ MC-1, Buffalo-4: MB HF-2, MB she Buff-2</td>
<td>Buffalo</td>
<td>Murrah milch Buffalo-1, 4 Years</td>
<td>Rice grain type warts on all four warts</td>
<td>n = 10, 3-4 cm</td>
<td>3 months</td>
<td>+++ , Moderate, Inj. Ivermectin tried</td>
</tr>
<tr>
<td>HWH-17</td>
<td>July-2010</td>
<td>Kalidas Banerjee Hirapur</td>
<td>Cattle-7: CBJ Cow-3, CBJ MC-2, CBJ HF-2</td>
<td>Cattle</td>
<td>CBJ MC-1, 10 Months</td>
<td>Squat type warts on hind limbs</td>
<td>n = 20, 3-5 cm</td>
<td>5 months</td>
<td>+++ , Moderate, Levamisole oral therapy</td>
</tr>
<tr>
<td>HWH-18</td>
<td>December-2010</td>
<td>Bimal Hazra Sirajbati</td>
<td>Cattle-7: CBJ Cow-3, CBJ FC-2, CBJ HF-2</td>
<td>Cattle</td>
<td>CBJ HF-1, 3 Years</td>
<td>Sesile type scattered lesions on neck, back and belly</td>
<td>n = 8, 3-4 cm</td>
<td>4 months</td>
<td>+, Mild, Thuja orally</td>
</tr>
<tr>
<td>HWH-19</td>
<td>December-2010</td>
<td>Samir Ghosh Nabagram</td>
<td>Cattle-5: ND Cow-2, CBJ HF-2, CBJ MC-1, Buffalo-6: MB BK-2, MB HF-2, MB she Buff-2</td>
<td>Cattle</td>
<td>CBJ HF-1, 3 Years</td>
<td>Pedunculated warts on face, neck, back and brisket</td>
<td>n = 10, 3-4 cm</td>
<td>6 months</td>
<td>+++ , Moderate, Levamisole orally</td>
</tr>
<tr>
<td>HWH-20</td>
<td>December-2010</td>
<td>Pranab Roy Radhapur</td>
<td>Cattle-8: ND Cow-3, ND BK-2, ND MC-1, ND HF-2</td>
<td>Cattle</td>
<td>ND MC, 13 Months</td>
<td>Cauliflower like pedunculated warts on ears and around the eyes</td>
<td>n = 23, 3-5 cm</td>
<td>5 months</td>
<td>+++ , Moderate, Inj. Ivermectin tried</td>
</tr>
<tr>
<td>HWH-21</td>
<td>December-2010</td>
<td>Sahadeb Sahu Shyampur</td>
<td>Cattle-7: CBJ Cow-3, CBJ FC-2, CBJ HF-2</td>
<td>Cattle</td>
<td>CBJ Heifer, 2.5 Years</td>
<td>Rice grain type warts on all four warts</td>
<td>n = 18, 3-4 cm</td>
<td>5 months</td>
<td>+++ , Moderate, Levamisole oral therapy</td>
</tr>
</tbody>
</table>
Table-14: Breed, age group and sex wise synopsis of cutaneous wart (CWT) and teat papilloma (TP) in cattle and buffalo in Howrah District of WB

<table>
<thead>
<tr>
<th>Breeds affected</th>
<th>Susceptible animal population in the affected herds</th>
<th>Total No. of clinically positive wart cases</th>
<th>Sex</th>
<th>Age group</th>
<th>No of CWT cases</th>
<th>No of TP cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indigenous and non-descript cattle</td>
<td>69</td>
<td>5</td>
<td>F-1</td>
<td>-</td>
<td>1</td>
<td>-</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>M-4</td>
<td>-</td>
<td>-</td>
<td>4</td>
</tr>
<tr>
<td>Cross breed cattle (CBJ)</td>
<td>55</td>
<td>13</td>
<td>F-11</td>
<td>1</td>
<td>9</td>
<td>1</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>M-2</td>
<td>2</td>
<td>-</td>
<td>2</td>
</tr>
<tr>
<td>Cross breed cattle (HLX)</td>
<td>9</td>
<td>2</td>
<td>F-2</td>
<td>-</td>
<td>2</td>
<td>-</td>
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<tr>
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<td></td>
<td></td>
<td>M</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Buffalo</td>
<td>12</td>
<td>1</td>
<td>F-1</td>
<td>-</td>
<td>-</td>
<td>01</td>
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<td></td>
<td></td>
<td></td>
<td>M</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Grand Total</td>
<td>145</td>
<td>21</td>
<td>F-15</td>
<td>7</td>
<td>12</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>M-6</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>
Table 15: Field survey and clinicopathological observations on cutaneous bovine papillomatosis in Nadia District of West Bengal

<table>
<thead>
<tr>
<th>Sl. No</th>
<th>Period of survey</th>
<th>Farmers name and address</th>
<th>Species and herd strength</th>
<th>Category of animals affected</th>
<th>Gross clinical observations</th>
<th>Duration of infection</th>
<th>Severity of affection and treatment given</th>
</tr>
</thead>
<tbody>
<tr>
<td>NDA-1</td>
<td>September-2009</td>
<td>Parul Biswas Bibadi Pally, Kalyani</td>
<td>Cattle:12 ND Cow-6, Gir HF-4, CBJ Cow-1, CBJ HF-1</td>
<td>Gir HF-1, 2 years</td>
<td>CWT on all four limbs, n = 20. Hard, horny, cauliflower like pedunculated warts (2-4 cm diameter)</td>
<td>4 Months</td>
<td>++++, Moderate Thuja orally</td>
</tr>
<tr>
<td>NDA-2</td>
<td>September-2009</td>
<td>Bijoy Dey Bibadi Pally, Kalyani</td>
<td>Cattle:7 CBJ Cow-4, HLX Cow-1, CBJ MC-1, CBJ HF-1</td>
<td>CBJ HF-1, 3 Years</td>
<td>Hard, horny, typical, pedunculated, warts on head, neck and fore limbs, (3-4 cm), n = 16</td>
<td>6 Months</td>
<td>++++, Moderate, Auto hemotherapy</td>
</tr>
<tr>
<td>NDA-3</td>
<td>October-2009</td>
<td>Ashim Mondal Bibadi Pally, Kalyani</td>
<td>Cattle:6 CBJ Cow-1, CBJ HF-2, ND Cow-2, ND FC-1</td>
<td>ND HF-1, 2.5 year</td>
<td>CWT on right fore limb and thorax n=22, hard, nodular, lobulated, pedunculated warts (3-4 cm)</td>
<td>5 Months</td>
<td>++++, moderate, complicated, magotized lesions, Autohemotherapy</td>
</tr>
<tr>
<td>NDA-4</td>
<td>October-2009</td>
<td>Brindaban Das Bibadi Pally</td>
<td>Cattle:6 ND Cow-3, Gir HF-1, CBJ Cow-1, CBJ FC-1</td>
<td>CBJ FC-1, 1 year</td>
<td>CWT on cheeks, ear tips and around the eyes, n = 27, hard, horny pedunculated warts, size ranges 2.5-3.5 cm</td>
<td>4 Months</td>
<td>++++, Moderate, Auto hemotherapy</td>
</tr>
<tr>
<td>NDA-5</td>
<td>December-2009</td>
<td>Sujoy Mondal Bibadi Pally, Kalyani</td>
<td>Cattle:7 HLX Bull-1, HLX Cow-2, ND Cow-2, ND HF-2</td>
<td>HLX Young bull-1, 3 years</td>
<td>CWT on cheeks, sub mandibular regions and all four limbs, n = 55, Hard, horny, pedunculated, warts (3-4 cm)</td>
<td>6 Months</td>
<td>++++, severe, Complicated, maggotized lesions, Autohemotherapy and Topicure spray</td>
</tr>
<tr>
<td>NDA-6</td>
<td>December-2009</td>
<td>Thakur Das Mondal, Taltala, Nadia</td>
<td>Cattle:7 ND Cow-3, ND HF-2, CBJ Cow-2</td>
<td>ND Heifer-1, 2 years</td>
<td>Cwts (3-4 cm) with multi centric distribution, whole body papillomatosis, n&gt;100</td>
<td>6 Months</td>
<td>++++, severe Auto hemotherapy and Levamisole oral therapy</td>
</tr>
<tr>
<td>NDA-7</td>
<td>December-2009</td>
<td>Pradip Mondal, Taltala, Nadia</td>
<td>Cattle:7 ND Cow-3, ND HF-2, ND FC-2</td>
<td>ND Female calf-1, 8 months</td>
<td>Hard, horny and pedunculated warts (2-3 cm), on rump slope, chest and wither, n = 23</td>
<td>3 Months</td>
<td>++++, Moderate</td>
</tr>
<tr>
<td>NDA-8</td>
<td>January-2010</td>
<td>Beni Madhab Golder, Jamtala, Muratipur, Nadia</td>
<td>Cattle:5 ND Cow-2, HLX HF-1, ND HF-2</td>
<td>HLX Heifer-1, 18 months</td>
<td>Diffuse frond type warts (1-2 cm) on teats, n = 4</td>
<td>6 Months</td>
<td>+, Mild Thuja orally</td>
</tr>
<tr>
<td>Case No.</td>
<td>Date</td>
<td>Owner</td>
<td>Species</td>
<td>Description</td>
<td>Duration</td>
<td>Treatment</td>
<td></td>
</tr>
<tr>
<td>---------</td>
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<td>-----------------------------------------------------------------------------</td>
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<td></td>
</tr>
<tr>
<td>NDA-9</td>
<td>January-2010</td>
<td>Manik Ghosh, Jamtala, Kalyani</td>
<td>Cattle:6 CBJ Cow-2, ND MC-2, ND Cow-2</td>
<td>ND Male calf-1, 16 months Dome shaped non pedunculated CWT (3-4 cm) on ears, around eye-at inner canthus and on back, n = 15</td>
<td>5 Months</td>
<td>++++, Moderate Oral Ivermectin</td>
<td></td>
</tr>
<tr>
<td>NDA-10</td>
<td>January-2010</td>
<td>Harisadhan Ghosh, Ghosh Para, Kalthalala, Kalyani</td>
<td>Cattle:8 ND Cow-4, ND BK-2, ND HF-1, ND MC-1</td>
<td>ND Heifer-1, 28 months Multiple pedunculated warts (2-5 cm) with irregular horny papillae on muzzle, ventral abdominal region and hind limbs, n = 12</td>
<td>4 Months</td>
<td>++++, Moderate Levamisole orally</td>
<td></td>
</tr>
<tr>
<td>NDA-11</td>
<td>January-2010</td>
<td>Nai Karmakar, near Ghoshpara Primary School, Kalyani</td>
<td>Cattle: 6 CBJ Cow-3, CBJ HF-2, CBJ MC-1</td>
<td>CBJ Heifer-1, 2 years Multicentric diffuse pedunculated warts (2-3 cm) on haired skin of the neck, thorax and abdomen, n &gt; 50</td>
<td>6 Months</td>
<td>++++, severe Auto hemotherapy</td>
<td></td>
</tr>
<tr>
<td>NDA-12</td>
<td>January-2010</td>
<td>Prakash Raut, JNM Hospital quarter complex, Mitra colony, Kalyani</td>
<td>Cattle: 6 ND Cow-2, ND HF-2, ND FC-2</td>
<td>ND Heifers-2, 16 months and 20 months respectively Whole body papillomatosis with extensive vegetative pedunculated lesions (2-6 cm) on all four limbs, eyes, head, face, neck, back and barrel, n &gt; 100 and above</td>
<td>6 Months</td>
<td>++++, severe and most complicated Inj. Anthiomaline</td>
<td></td>
</tr>
<tr>
<td>NDA-13</td>
<td>January-2010</td>
<td>Shankar Talukder, Brick field, Bhuttabazar, Kalyani</td>
<td>Cattle: 8 HLX Cow-3, CBJ Cow-3, CBJ HF-2</td>
<td>CBJ Heifer-1, 24 months Single solitary wart (7 cm) squat type, on neck</td>
<td>4 Months</td>
<td>+, Mild Surgical cure</td>
<td></td>
</tr>
<tr>
<td>NDA-14</td>
<td>January-2010</td>
<td>Biswajit Biswas, Kalyani Simanta</td>
<td>Cattle: 6 ND Cow-2, ND HF-2, ND FC-2</td>
<td>ND FC-1, 10 Months Multiple nodular non pedunculated warts (4-6 cm) on fore limbs, n = 23</td>
<td>6 Months</td>
<td>++++, moderate Inj. Anthiomaline</td>
<td></td>
</tr>
<tr>
<td>NDA-15</td>
<td>January-2010</td>
<td>Shankar Ghosh, Brick field area, Majher Char, Kalyani</td>
<td>Cattle: 5 ND Cow-2, ND HF-2, ND MC-1 Buffalo:6 MB HF-2, MB she Buff-4</td>
<td>ND heifer, 2.5 years Pedunculated, cauliflower like CWT (4-5 cm) on head, neck, face and fore limbs (mid metatarsal and mid carpals), n = 20</td>
<td>5 Months</td>
<td>++++, Moderate Oral Ivermectin</td>
<td></td>
</tr>
<tr>
<td>NDA-16</td>
<td>January-2010</td>
<td>Prabir Sarkar, kalyani Simanta,</td>
<td>Cattle: 6 ND Cow-2, CBJ HF-3, CBJ MC-1</td>
<td>CBJ Heifer, 2 years Hard, horny, pedunculated warts (3-5 cm) on neck and fore limbs, n = 3</td>
<td>4 Months</td>
<td>+, Mild Thuja oral therapy</td>
<td></td>
</tr>
<tr>
<td>NDA-17</td>
<td>January-2010</td>
<td>Gouranga Sarkar, Kalyanisimanta,</td>
<td>Cattle: 7 ND Cow-2, ND HF-1 CBJ HF-2, CBJ FC-2</td>
<td>ND Heifer-1, 1.5 years Sessile type of warts (4-5 cm) on head, below the eyes and on shoulder, n = 12</td>
<td>6 Months</td>
<td>++++, Moderate Oral Ivermectin</td>
<td></td>
</tr>
</tbody>
</table>
| NDA-18 | January-2010 | Shankar Mallick, Muratipur, Kalyani | Cattle:6
ND Cow-2, CBJ HF-3, CBJ MC-1 | CBJ Male calf-1, 9 months | Polypoid non pedunculated wart like lesions (3-4 cm) on right nares, n = 4 | 6 Months | +, Mild
Thuja orally |
| NDA-19 | January-2010 | Viky Saow, ITI Colony, Kalyani | Cattle:6
ND Cow-2, CBJ HF-2, CBJ MC-1, CBJ FC-1 | CBJ HF-1, 2.5 Years | Multiple non pedunculated papulonodules (3-4 cm) on face, neck and dewlap, n = 21 | 4 Months | ++++, Moderate
Inj. Levamisol HCl |
| NDA-20 | January-2010 | Sarat Kr Das, 10 No Ward Office, A/7-58, Kalyani | Cattle:8
HLX Cow-3, CBJ Cow-3, CBJ HF-2 | CBJ HF-1, 3 Years | Small cauliflower like pedunculated wart lesions (2-4 cm) on flank and back, n = 10 | 6 Months | ++, Mild
Thuja oral therapy |
| NDA-21 | January-2010 | Amit Halder, Near JNM Hospital Jaltanky, Kalyani | Cattle:6
ND Cow-2, CBJ HF-3, CBJ MC-1 | CBJ HF-1, 2 Years | Rice grain type warts (1-2 cm) on caudal right teat, n = 12 | 4 Months | ++, Mild
Thuja oral therapy |
| NDA-22 | January-2010 | Gour Nitai Middya, Muratipur | Cattle:6
ND Cow-2, CBJ FC-2, CBJ MC-1, CBJ HF-1 | CBJ Male calf-1, 9 months | Flat, round type non pedunculated warts (3-4 cm) on ventral abdomen, n = 16 | 6 Months | ++++, Moderate
Inj. Ivermectin |
| NDA-23 | January-2010 | Pran Krishna Middya, Muratipur | Cattle:6
ND Cow-2, CBJ HF-3, CBJ MC-1 | CBJ HF-1, 2.5 Years | Rice grain like warts (3-5 cm) restricted to hair less part of the teats, n = 6 | 5 Months | +, Mild
Inj. Anthiomaline |
| NDA-24 | January-2010 | Subal Das, Majher Char | Cattle:5
ND Cow-3, ND HF-1, Gir FC-1 | ND Heifer-1, 2.5 years | Solitary wart (6 cm in diameter) with sessile projection and flat surface on left lower neck, n=1 | 4 Months | +, Mild
Surgical cure |
| NDA-25 | January-2010 | Bijoy Murmu, Baror Pally, Kalyani | Cattle:6
ND Cow-2, CBJ HF-3, CBJ MC-1 | CBJ HF-1, 2.0 Years | Large frond, fibropapilloma (4-5 cm) on udder and teats, n=16 | 6 Months | ++++, Moderate
Inj. Anthiomaline |
| NDA-26 | January-2010 | Suk Dayal Yadav, Rahtula, Kalyani | Cattle:4
CBJ Cow-2, CBJ HF-1, CBJ MC-1 | CBJ HF-1, 2.5 Years | Multiple morbid wart (2-4 cm) like excrescence upon the skin throughout the body, n=60 | 5 Months | ++++, Moderate
Inj. Anthiomaline |
| NDA-27 | January-2010 | Nitai Baroi, Taltala, Math Para, Kalyani | Cattle:5
ND Cow-3, Gir HF-1, Gir FC-1 | Gir heifer-1, 2 years | Extensive papillomatosis with varying sized (4-6 cm) non pedunculated warts on head, neck and belly, n = 30 | 4 Months | ++++, Moderate
Inj. Anthiomaline |
| NDA-28 | January-2010 | Dulal Das, Maila Tanky, Kalyani | Cattle:6
ND Cow-2, CBJ HF-3, CBJ | CBJ HF-1, 2.5 Years | Numerous cocks comb like non pedunculated warts (4-6 cm)on right axilla, n=20 | 6 Months | ++++, Moderate
Oral Ivermectin |
<p>| NDA-29 | January-2010 | Gopal Muni, Sahidpally, Kalyani | MC-1 | Cattle:6 ND Cow-2, CBJ HF-3, CBJ FC-1 | CBJ HF-1, 2 Years | Small (1-2 cm) oval fibropapilloma at the base of the teats, n = 7 | 6 Months | +, Mild Inj. Anthiomaline |
| NDA-30 | January-2010 | Manik Sarkar, Char Nandanbati, Kalyani | ND Cow-2, ND HF-3, CBJ MC-1 | ND Heifer-1, 2.5 years | Big solitary lentil shaped non pedunculated wart (9 cm) on right neck, n = 1 | 4 Months | +, Mild Oral Ivermectin |
| NDA-31 | January-2010 | Mahesh Jadav, High Road, Kalyani | Cattle:6 ND Cow-2, ND HF-3, ND MC-1 Buffalo:4 MB HF-2, Murrah she Buff-2 | ND Heifer-1, 3.5 years | Luxurient pedunculated warty growths (4-6 cm) on eyelids, forehead, meatus auditorius and left axilla, n = 24 | 6 Months | +++, Moderate Inj. Anthiomaline |
| NDA-32 | February-2010 | Joydeb Das, Majherchar, Kalyani | Cattle:6 ND Cow-2, CBJ HF-2, CBJ FC-1, CBJ Bull-1 | CBJ HF-1, 2 Years | Hard horny conical pedunculated warts (3-5 cm) on face, neck and shoulder, n = 12 | ++++, Moderate Oral Ivermectin |
| NDA-33 | February-2010 | Nakul Das, Majherchar, Kalyani | Cattle:6 ND Cow-2, ND HF-3, ND MC-1 | ND Heifer-1, 3 years | Small frond type papilloma (1-2 cm) on all four teats, n = 6 | 4 Months | +, Mild Ivermectin orally |
| NDA-34 | February-2010 | Biren Mondal, Taltala, Kalyani | Cattle:5 CBJ Cow-3, CBJ HF-2 | CBJ cow-1, 3 Years | Extensive papillomatosis (3-7 cm) all throughout the body, pedunculated warts, n = 56 | 6 Months | ++++, Severe Autohemotherapy |
| NDA-35 | February-2010 | Akhil Mukherjee, Barajaguli, Haringhata-2 No GP, Feb’2010 | Cattle:8 HLX Cow-3, CBJ Cow-3, CBJ HF-2 | HLX Cow-1,3 Years | Persistent florid type warts (6-8 cm) on rear teats, n=4 | 5 Months | +, Mild Surgical cure |
| NDA-36 | February-2010 | Habla Mukherjee, Barajaguli, Haringhata-2 No GP | Cattle:6 ND Cow-2, ND HF-3, CBJ MC-1 | CBJ MC-1, 12 Months | Multiple maggotized, pedunculated warts (3-5 cm) disseminated on inguinal region and inner aspect of left thigh, n&gt;50 | 4 Months | ++++, Severe Auto hemotherapy |
| NDA-37 | February-2010 | Choto Monu Sardar, Barajaguli | Cattle:6 ND Cow-3, ND HF-2, ND MC-1 Buffalo:4 MB HF-2, Murrah she Buff-2 | CBJ MC-1, 10 Months | Dome shaped non pedunculated wart (4 cm) with undulating surface on left eye lid, n = 1 | 6 Months | +, Mild Surgical cure |
| NDA-38 | February-2010 | Rajesh Prasad, Baror Pally, Kalyani | Cattle:6 ND Cow-2, CBJ HF-3, CBJ MC-1 | CBJ FC-1, 9 Months | Generalized papillomatosis with pedunculated cutaneous lesions (4-5 cm), n&gt;50 | 3 Months | ++++, Severe Inj. Anthiomaline |
| NDA-39 | March-2010 | Basudeb Mallick, Mazdia, Chakdha | Cattle:6 ND Cow-2, ND HF-3, ND MC-1 | CBJ Cow-1,3 years | Multiple dome shaped non pedunculated warts (2-3 cm) on face and dorsal forelimbs, n = 20 | 4 Months | +++, Moderate Inj. Ivermectin |
| NDA-40 | March-2010 | Ajit Bal, Shikarpur, Chakdaha | Cattle:5 CBJ Cow-3, CBJ HF-2 | CBJ FC-1, 10 Months | Nodular pedunculated warts (3-4 cm) on head, neck and ears, n=9 | 3 Months | +, Mild Thuja orally |
| NDA-41 | March-2010 | Abinash Mondal, Shikarpur, Chakdaha | Cattle:8 HLX Cow-3, CBJ Cow-3, CBJ HF-2 | ND FC-1, 7 Months | Squat type, multiple warts (3-4 cm) on right ear and on eyes, n = 8 | 2 Months | +, Mild Thuja orally |
| NDA-42 | March-2010 | Purna Chandra Das, Shikarpur, Chakdaha | Cattle:6 ND Cow-2, ND HF-3, CBJ Cow-1 | CBJ Cow-1,3.5 years | Nodular warts (2-3 cm) on udder and teats, n=8 | 4 Months | +, Mild Thuja oral therapy and Autohemotherapy |
| NDA-43 | March-2010 | Sanat Sutradhar, Gayeshpur, Near Vivekananda Byamagar, Nadia | Cattle:6 ND Cow-4, ND HF-1, ND MC-1 Buffalo:4 MB HF-2, Murrah she Buff-2 | CBJ HF-1, 2 Years | Pedunculated, cauliflower like warts (3-5 cm) solely on head (poll region), n=7 | 6 Months | +, Mild Ivermectin orally |
| NDA-44 | March-2010 | Kesta Das, 2 No Vivekananda Pally, Behind ESI Hospital, Gayespur | Cattle:6 ND Cow-2, CBJ HF-3, CBJ Cow-1 | CBJ Cow-1,3 years | Multiple sessile type warts (4-5 cm) solely on neck region bilaterally, n=9 | 6 Months | +, Mild Inj. Anthiomaline |
| NDA-45 | March-2010 | Tutai Das, Bedibhaban, Gayeshpur | Cattle:6 CBJ Cow-2, ND Cow-3, CBJ MC-1 | CBJ Cow-1,3.6 years | Warts (4-6 cm) with round and sessile projections on tail base and around the anus, n=6 | 4 Months | +, Mild Thuja orally |
| NDA-46 | March-2010 | Goutam Bhagat, Kuliapat Thakurbari, Gayespur | Cattle:5 CBJ Cow-3, CBJ HF-2 | CBJ FC-1, 12 Months | Multiple pedunculated warts(3-4 cm) solely on neck region, n=12 | 6 Months | ++++, Moderate Auto-hemotherapy |
| NDA-47 | March-2010 | Dulal Das, Majherchar, | Cattle:8 HLX Cow-3, CBJ Cow-3, | HLX HF-1, 2 Years | Multiple non pedunculated warts(4-5 cm) on inter-scapular region, n=6 | 5 Months | +, Mild Thuja orally |
| 124 | Mailatanky, Kalyani | CBJ HF-2 | Sariful Mondal, Ghoragacha, Nadia | Cattle:6 ND Cow-2, ND HF-3, CBJ MC-1, Buffalo-4 | Murra she BF-1, 4 Years | Small (1-2 cm) rice grain type warts on teats, n=10 | 4 Months | +, Mild Inj. Anthiomaline |
| 49 | April-2010 | Md Jahangir Hossain, Ghoragacha, Nadia | Cattle:6 ND Cow-2, CBJ HF-3, ND MC-1 Buffalo:4 MB HF-2, Murrah she Buff-2 | CBJ HF-1, 2 Years | Frond type warts (2-3 cm) on caudal left teat, n=6 | 6 Months | +, Mild Thuja orally |
| 50 | April-2010 | Mosaraf Hossain, Ghoragacha, Nadia | Cattle:6 CBJ Cow-2, CBJ HF-3, CBJ MC-1 | CBJ Cow-1,5 years | Rice grain type warts (2-3 cm) on all four teats, n=12 | 5 Months | +++, Moderate Autohemotherapy |
| 51 | April-2010 | Joynal Mondal, Ghoragacha, Nadia | Cattle:6 ND Cow-2, ND HF-3, ND MC-1 | ND Cow-1,5 Years | Frond type warts(1-2 cm) on caudal left teat, n=6 | 4 Months | +, Mild Thuja orally |
| 52 | April-2010 | Surabuddin Mondal, Ghoragacha, Nadia | Cattle:5 CBJ Cow-3, CBJ FC-2 | CBJ FC-1, 11 Months | Multiple pedunculated warts (4-6 cm) on interscapular region, n=6 | 6 Months | +, Mild Thuja orally |
| 53 | April-2010 | Raimoni Murmu, Birsidhunagar, Kalyani | Cattle:8 ND Cow-3, ND MC-3, CBJ HF-2 | ND HF-1, 2 Years | Cauliflower like pedunculated wart (6 cm)on inner surface of right pinna, n=1 | 6 Months | +, Mild Surgical cure |
| 54 | April-2010 | Raimoni Murmu, Birsidhunagar, Kalyani | Cattle:6 ND Cow-2, ND HF-3, CBJ FC-1 | CBJ FC-1, 11 Months | Small 3-4 cm in diameter) Cauliflower like pedunculated warts on distal hind legs, n=12 | 4 Months | +++, Moderate Autohemotherapy |
| 55 | April-2010 | Raimoni Murmu, Birsidhunagar, Kalyani | Cattle:6 ND Cow-2, ND HF-3, ND MC-1 Buffalo:2 MB HF-2 | CBJ Cow-1,3 years | Single pedunculated out growth (6 cm)with broad base, knocked down and fly blown, maggotized wart on left lower neck, n=1 | 4 Months | +, Mild Surgical excision and topicure spray |
| 56 | April-2010 | Sakro Hansda, A/5 No Colony, Santal Para, Kalyani | Cattle:6 ND Cow-2, ND HF-3, CBJ MC-1 | ND HF-1,3 years | Pedunculated warts (4-6 cm) solely on neck region, n=12 | 6 Months | +++, Moderate Autohemotherapy |</p>
<table>
<thead>
<tr>
<th>Case</th>
<th>Date</th>
<th>Details</th>
<th>Results</th>
<th>Treatment</th>
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<td>57</td>
<td>April-2010</td>
<td>Pravati Murmu, A/5 No Colony, Santal Para, Kalyani</td>
<td>Cattle: 6 ND Cow-2, ND HF-3, CBJ FC-1</td>
<td>Flat, clinically ambiguous non pedunculated warts (3-4 cm) on back, n=12</td>
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<td>58</td>
<td>April-2010</td>
<td>Parasi Murmu, A/5 No Colony, Santal Para, Kalyani</td>
<td>Cattle: 6 ND Cow-2, ND HF-3, ND MC-1</td>
<td>Dome shaped non pedunculated warts (2-3 cm) on head, right neck and thorax, n=20</td>
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<td>59</td>
<td>April-2010</td>
<td>Mahendra Datta, Pratapgarh, Hatbahirgachi, Nadia</td>
<td>Cattle: 6 ND Cow-2, ND HF-3, ND MC-1 Buffalo:2 MB HF-1, MB Bull-1</td>
<td>Nodular, non pedunculated maggotized warts (3-4 cm) on inner aspect of left thigh and scrotal sack, n=28</td>
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<tr>
<td>60</td>
<td>May-2010</td>
<td>Prafulla Biswas, Pratapgarh, Hatbahirgachi, Nadia</td>
<td>Cattle: 6 ND Cow-2, ND HF-3, ND MC-1</td>
<td>Cauliflower like pedunculated warts (3-4 cm) on distal hind legs, n=12</td>
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<td>61</td>
<td>May-2010</td>
<td>Swapan Halder, Pratapgarh, Hatbahirgachi, Nadia</td>
<td>Cattle: 6 CBJ Cow-2, CBJ HF-3, CBJ MC-1</td>
<td>Axillary pedunculated warts affecting both axilla (4-6 cm), as if bunch of grapes, n=43</td>
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<tr>
<td>62</td>
<td>May-2010</td>
<td>Shyama Mallick, Sanatan Pur, Bildharpur, Nadia</td>
<td>Cattle: 6 ND Cow-2, ND HF-3, ND MC-1</td>
<td>Non pedunculated warts (3-5 cm) on head, neck and dewlap, n=16</td>
</tr>
<tr>
<td>63</td>
<td>May-2010</td>
<td>Bijoy Biswas, Soula, Churni, Raghunathpur</td>
<td>Cattle: 6 ND Cow-2, ND HF-3, CBJ HF-1</td>
<td>Whole body papillomatosis (2-8 cm) covering almost 40% of body surface with non pedunculated warts, n=100</td>
</tr>
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<td>64</td>
<td>May-2010</td>
<td>Bibhuti Biswas, Soula, Churni, Raghunathpur</td>
<td>Cattle: 6 ND Cow-2, ND HF-3, ND Bull-1</td>
<td>Diffuse club shaped pedunculated warts (3-4 cm) on fore limbs and thorax, n=12</td>
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<tr>
<td>65</td>
<td>May-2010</td>
<td>Harikrishna Adhikery, Soula, Churni, Raghunathpur</td>
<td>Cattle: 6 CBJ Cow-2, CBJ HF-3, CBJ MC-1</td>
<td>Diffuse elevated dome shaped non pedunculated warts (4-6 cm) on hind teats, n=16</td>
</tr>
<tr>
<td>66</td>
<td>May-2010</td>
<td>Sudhir Ray, Srikrishnapur,</td>
<td>Cattle: 6 ND Cow-2, ND HF-2, CBJ</td>
<td>Rough, irregular cauliflower like pedunculated growths (3-4 cm) on head, neck and croup, n=20</td>
</tr>
<tr>
<td>ID</td>
<td>Group</td>
<td>Name</td>
<td>Cattle:</td>
<td>Disease</td>
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<tr>
<td>67</td>
<td>May-2010</td>
<td>Jalil Dafader, Srikrishnapur, Barnia, Nadia</td>
<td>Cattle:6 ND Cow-2, ND HF-3, CBJ MC-1</td>
<td>White grey horny pedunculated warts (3-4 cm) on cheeks and throat, n=8</td>
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<tr>
<td>68</td>
<td>May-2010</td>
<td>Baraful Bibi, Srikrishnapur, Barnia, Nadia</td>
<td>Cattle:5 CBJ Cow-2, CBJ HF-3</td>
<td>Numerous papillary outgrowths (2-5 cm) on lumbar region, n=20</td>
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<td>69</td>
<td>June-2010</td>
<td>Nikhil Biswas, Bahirgachi, Nadia</td>
<td>Cattle:6 ND Cow-3, ND HF-3</td>
<td>Multiple pedunculated warts (3-5 cm) throughout the body attached to skin by broad base, maggotized and complicated, n=40</td>
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<tr>
<td>70</td>
<td>June-2010</td>
<td>Nikunja Bagchi, Bahirgachi, Nadia</td>
<td>Cattle:5 CBJ Cow-3, CBJ HF-2</td>
<td>White grey, solid, pedunculated horny warts (5-6 cm) on cheeks and throat, n=8</td>
</tr>
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<td>71</td>
<td>June-2010</td>
<td>Mira Madhu, Bahirgachi, Nadia</td>
<td>Cattle:6 ND Cow-2, CBJ HF-2, CBJ FC-2</td>
<td>Multiple cauliflower like pedunculated warts (4-5 cm) on face, neck and brisket, n=21</td>
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<td>72</td>
<td>June-2010</td>
<td>Monindra Mallick, Bahirgachi, Nadia</td>
<td>Cattle:5 CBJ Cow-3, CBJ HF-2</td>
<td>Complicated, non pedunculated magotized warts (4-5 cm) distributed on head, neck, fore limbs and trunk, n=42</td>
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<td>73</td>
<td>June-2010</td>
<td>Sukumar Tikadar, Bahirgachi, Nadia</td>
<td>Cattle:8 HLX Cow-3, CBJ Cow-3, CBJ HF-2</td>
<td>Numerous pedunculated CWts on fore limbs only with varying sizes (3-5 cm) warts, n=50</td>
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<td>74</td>
<td>June-2010</td>
<td>Satish Adhikary, Bahirgachi, Nadia</td>
<td>Cattle:6 ND Cow-2, ND HF-3, CBJ MC-1</td>
<td>Multiple cocks comb like pedunculated warts (3-4 cm) on right axilla, n=20</td>
</tr>
<tr>
<td>75</td>
<td>June-2010</td>
<td>Jharna Mondal, Majhergram, Nadia</td>
<td>Cattle:6 ND Cow-2, ND HF-3, ND MC-1 Buffalo:4 MB HF-2, Murrah she Buff-2</td>
<td>Small dome like non pedunculated warts (2-3 cm) on all four teats, n=17</td>
</tr>
<tr>
<td>76</td>
<td>June-2010</td>
<td>Jharna Mondal, Majhergram, Nadia</td>
<td>Cattle:6 ND Cow-2, ND HF-3, ND MC-1 Buffalo:4 MB HF-2, Murrah she Buff-2</td>
<td>Big solitary tennis ball (8 cm) shaped non pedunculated wart on right lower neck, n=1</td>
</tr>
<tr>
<td>No.</td>
<td>Date</td>
<td>Name</td>
<td>State, Block</td>
<td>Animals</td>
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<td>77</td>
<td>June-2010</td>
<td>Narayan Mistry, Majhergram, Nadia</td>
<td>Cattle:6, ND Cow-2, ND HF-3, ND MC-1</td>
<td>ND FC-1, 9 Months</td>
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<td>78</td>
<td>July-2010</td>
<td>Swapan Mandal, Majhergram, Nadia</td>
<td>Cattle:6, ND Cow-2, ND HF-3, ND MC-1, Buffalo:4, MB HF-2, Murrah she Buff-2</td>
<td>ND HF-1, 2.5 years</td>
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<td>79</td>
<td>July-2010</td>
<td>Janaki Malakar, Masarda, Debogram</td>
<td>Cattle:6, ND Cow-2, CBJ HF-3, CBJ MC-1</td>
<td>ND HF-1, 1.5 years</td>
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<td>80</td>
<td>July-2010</td>
<td>Biswajit Nandy, Masarda, Debogram</td>
<td>Cattle:6, ND Cow-2, CBJ HF-3, ND MC-1, CBJ HF-1, 2 Years</td>
<td>CBJ HF-1, 2 Years</td>
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<td>81</td>
<td>July-2010</td>
<td>Peter Barai, Debogram, Nadia</td>
<td>Cattle:5, ND Cow-3, ND HF-2</td>
<td>ND Heifer-1, 3 years</td>
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<td>82</td>
<td>July-2010</td>
<td>Paritosh Mandal, Debogram, Nadia</td>
<td>Cattle:8, HLX Cow-3, CBJ Cow-3, CBJ HF-2, CBJ cow-1, 3 Years</td>
<td>CBJ cow-1, 3 Years</td>
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<td>83</td>
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<td>Swapan Maitra, Gangnagpur Debogram, Nadia</td>
<td>Cattle:6, ND Cow-2, ND HF-3, HLX Cow-1, HLX HF-3 Years</td>
<td>HLX Cow-1</td>
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<td>84</td>
<td>Aug-2010</td>
<td>SurjoKanta Sutar, Sabujpally, Ranaghat-II Block</td>
<td>Cattle:6, ND Cow-2, ND HF-3, CBJ MC-1</td>
<td>ND Heifer-1, 3 years</td>
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<td>85</td>
<td>Aug-2010</td>
<td>Rabi Ranjan Bagal, Sabujpally, Ranaghat-II Block</td>
<td>Cattle:6, ND Cow-3, ND HF-3, Buffalo:4, MB HF-2, Murrah she Buff-2</td>
<td>ND Heifer-1, 2.5 years</td>
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<td>86</td>
<td>Aug-2010</td>
<td>Sankar Bose, Rupasripally, Ranaghat-II Block</td>
<td>Cattle:6, ND Cow-2, ND HF-2, CBJ HF-1, CBJ MC-1</td>
<td>ND Heifer-1, 2 years</td>
</tr>
<tr>
<td>Case Number</td>
<td>Date</td>
<td>Location</td>
<td>Breed</td>
<td>Age</td>
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<td>87</td>
<td>Aug-2010</td>
<td>Sushil Das, Sabujpally, Ranaghat-II Block</td>
<td>Cattle:6</td>
<td>ND Cow-2, ND HF-1, CBJ Cow-1, CBJ HF-2</td>
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<td>88</td>
<td>Aug-2010</td>
<td>Sudhir Chakraborty, Dayal Nagar, Ranaghat-II Block</td>
<td>Cattle:6</td>
<td>ND Cow-2, ND HF-2, CBJ HF-1, CBJ MC-1</td>
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<td>89</td>
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<td>Bichitra Talukder, Gangnapur, Ranaghat-II Block</td>
<td>Cattle:8</td>
<td>HLX Cow-3, CBJ Cow-3, CBJ HF-2</td>
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<td>90</td>
<td>Aug-2010</td>
<td>Basudev Biswas, Hanskhali, Badkulla-1</td>
<td>Cattle:6</td>
<td>ND Cow-2, ND HF-3, CBJ HF-1</td>
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<td>91</td>
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<td>Pravas Biswas, Khamar Simulia, Hanskhali, Badkulla-1</td>
<td>Cattle:6</td>
<td>ND Cow-2, ND HF-3, ND MC-1</td>
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<td>92</td>
<td>Aug-2010</td>
<td>Kinaruddin Biswas, Hanskhali, Badkulla-1</td>
<td>Cattle:6</td>
<td>ND Cow-2, CBJ Cow-3, CBJ MC-1</td>
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<td>93</td>
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<td>Basudev Biswas, Tarataka, Hanskhali, Badkulla-1</td>
<td>Cattle:5</td>
<td>HLX Cow-3, HLX HF-2</td>
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<td>94</td>
<td>Aug-2010</td>
<td>Bimal Biswas, Hanskhali, Badkulla-1</td>
<td>Cattle:5</td>
<td>CBJ Cow-3, CBJ HF-2</td>
</tr>
<tr>
<td>95</td>
<td>Aug-2010</td>
<td>Utpal Sarkar, Udaypur, Ranaghat-1</td>
<td>Cattle:8</td>
<td>HLX Cow-3, CBJ Cow-3, CBJ HF-2</td>
</tr>
<tr>
<td>96</td>
<td>Aug-2010</td>
<td>Ganes Mondal, Nutan Tarapur, Ranaghat-1</td>
<td>Cattle:6</td>
<td>ND Cow-2, ND HF-3, ND MC-1</td>
</tr>
<tr>
<td>97</td>
<td>Aug-2010</td>
<td>Asoke Biswas</td>
<td>Cattle:6</td>
<td>ND MC-1, 12</td>
</tr>
<tr>
<td>Case</td>
<td>Date</td>
<td>Animal Details</td>
<td>Lesion Description</td>
<td>Duration</td>
</tr>
<tr>
<td>------</td>
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</tr>
<tr>
<td>98</td>
<td>Aug-2010</td>
<td>Cattle: 6 ND Cow-2, ND HF-3, ND MC-1</td>
<td>Multiple pedunculated warts (3-4 cm) disseminated on inguinal region and inner aspect of left thigh, n=30</td>
<td>6 Months</td>
</tr>
<tr>
<td>99</td>
<td>Aug-2010</td>
<td>Cattle: 6 ND Cow-2, ND HF-3, CBJ MC-1</td>
<td>Dome shaped wart on right axilla (4 cm) with undulating surface, n=1</td>
<td>6 Months</td>
</tr>
<tr>
<td>100</td>
<td>Sept-2010</td>
<td>Cattle: 6 ND Cow-2, ND HF-3, ND MC-1, Buffalo: 4 MB HF-2, Murrah she Buff-2</td>
<td>Generalized cutaneous papillomatosis with scattered pedunculated lesions (2-5 cm), n=40</td>
<td>4 Months</td>
</tr>
<tr>
<td>101</td>
<td>Sept-2010</td>
<td>Cattle: 6 ND Cow-2, CBJ HF-3, CBJ MC-1</td>
<td>Multiple dome shaped non pedunculated warts (2-3 cm) on face and fore limbs, n=20</td>
<td>6 Months</td>
</tr>
<tr>
<td>102</td>
<td>Sept-2010</td>
<td>Cattle: 6 ND Cow-2, ND HF-3, ND MC-1</td>
<td>Nodular non pedunculated warts (4-5 cm) on head, neck and ears, n=12</td>
<td>4 Months</td>
</tr>
<tr>
<td>103</td>
<td>Sept-2010</td>
<td>Cattle: 5 CBJ Cow-3, CBJ HF-2</td>
<td>Extensive papillomatosis with varying sized (2-6 cm) pedunculated warts all throughout the body, n&gt;50</td>
<td>4 Months</td>
</tr>
<tr>
<td>104</td>
<td>Oct’2010</td>
<td>Cattle: 8 HLX Cow-3, CBJ Cow-3, CBJ HF-2</td>
<td>Numerous cauliflower like pedunculated warts (2-4 cm) on right axilla, n&gt;30</td>
<td>6 Months</td>
</tr>
<tr>
<td>105</td>
<td>Oct’2010</td>
<td>Cattle: 6 ND Cow-2, ND HF-3, ND MC-1</td>
<td>Small, round to oval pedunculated warts (2-3 cm), n=7 on left lower neck</td>
<td>5 Months</td>
</tr>
<tr>
<td>106</td>
<td>Oct’2010</td>
<td>Cattle: 6 ND Cow-4, ND HF-1, ND MC-1</td>
<td>Big solitary lentil shaped non pedunculated wart (8 cm) on the back, n=1</td>
<td>4 Months</td>
</tr>
<tr>
<td>No.</td>
<td>Date</td>
<td>Name</td>
<td>Age/Type</td>
<td>Lesion Description</td>
</tr>
<tr>
<td>-----</td>
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<td>-------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>107</td>
<td>Oct’2010</td>
<td>Ramen Sinha, Taherpur</td>
<td>Cattle:5 Buffalo:5 MB she Buff-5</td>
<td>Luxurient pedunculated warty growths (3-4 cm) on eyelids, forehead, ear tips, neck and dewlap, n=24</td>
</tr>
<tr>
<td>108</td>
<td>Dec, 2010</td>
<td>Kartick Ghosh, Phulia</td>
<td>Cattle:6 ND Cow-2, ND HF-3, CBJ MC-1</td>
<td>Hard horny conical pedunculated warts (3-4 cm) on face, neck and shoulder, n=12</td>
</tr>
<tr>
<td>109</td>
<td>Dec, 2010</td>
<td>Bimal Ghosh, Phulia</td>
<td>Cattle:6 ND Cow-2, ND HF-3, ND MC-1 Buffalo:4 MB HF-2, Murrah she Buff-2</td>
<td>Small frond type papilloma on rear teats, n=6</td>
</tr>
<tr>
<td>110</td>
<td>Dec, 2010</td>
<td>Sachin Ghosh, Phulia</td>
<td>Cattle:6 ND Cow-2, CBJ HF-3, CBJ FC-1</td>
<td>Extensive papillomatosis (2-6 cm) all throughout the body with dense vegetative pedunculated out growths, n=56</td>
</tr>
<tr>
<td>111</td>
<td>Jan, 2011</td>
<td>Nares Das, Gadamara</td>
<td>Cattle:6 ND Cow-2, ND HF-3, ND MC-1</td>
<td>Persistent florid type non pedunculated wart (5 cm) on inner pinna of left ear, n=1</td>
</tr>
</tbody>
</table>
Table 16: Breed, age group and sex wise synopsis of cutaneous wart (CWT) and teat papilloma (TP) in cattle and buffalo in Nadia District of WB

<table>
<thead>
<tr>
<th>Breeds affected</th>
<th>Susceptible animal population in the affected herds</th>
<th>Total No. of clinical wart cases</th>
<th>Sex</th>
<th>Age group</th>
<th>No of CWT cases</th>
<th>No of TP cases</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Calf hood</td>
<td>Sub-adult</td>
<td>Adult</td>
</tr>
<tr>
<td>Indigenous and non-descript cattle</td>
<td>294</td>
<td>48</td>
<td>F-45</td>
<td>05</td>
<td>39</td>
<td>01</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>M-3</td>
<td>2</td>
<td>-</td>
<td>1</td>
</tr>
<tr>
<td>Cross breed cattle (CBJ)</td>
<td>223</td>
<td>53</td>
<td>F-50</td>
<td>7</td>
<td>31</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>M-3</td>
<td>3</td>
<td>-</td>
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</tr>
<tr>
<td>Pure exotic cattle</td>
<td>-</td>
<td>-</td>
<td>F</td>
<td>-</td>
<td>-</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>M</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Cross breed cattle (HLX)</td>
<td>47</td>
<td>9</td>
<td>F-8</td>
<td>-</td>
<td>7</td>
<td>1</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>M-1</td>
<td>-</td>
<td>1</td>
<td>-</td>
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<tr>
<td>Buffalo</td>
<td>49</td>
<td>2</td>
<td>F-1</td>
<td>-</td>
<td>-</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>M-1</td>
<td>-</td>
<td>1</td>
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</tr>
<tr>
<td>Grand Total</td>
<td>613</td>
<td>112</td>
<td>112</td>
<td>17</td>
<td>79</td>
<td>16</td>
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<tr>
<td>Sl No</td>
<td>Period of survey</td>
<td>Owners name &amp; address</td>
<td>Species &amp; herd strength</td>
<td>Category of animals affected</td>
<td>Distribution of wart</td>
<td>Gross clinical observation</td>
</tr>
<tr>
<td>-------</td>
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</tr>
<tr>
<td>NTP-1</td>
<td>Dec-2009</td>
<td>Kashinath Jadab R.P. School Khantal area, Kanchrapara</td>
<td>Bovine &amp; Bubaline: CBJ cow-10 Murrah buffaloes-25</td>
<td>CBJ HF-1, 1.5 year</td>
<td>Anogenital region</td>
<td>Multiple globoid non pedunculated warts of different sizes (1.5 -2.5cm), n=12</td>
</tr>
<tr>
<td>NTP-2</td>
<td>Dec-2009</td>
<td>Biswanath Jadab R.P. School Khantal area, Kanchrapara</td>
<td>Bovine &amp; Bubaline: HLX cow-7, Murrah Buffaloes-20</td>
<td>Murrah she buffalo-1, 4 years</td>
<td>Udder and teats</td>
<td>Diffuse frond type warts of varying sizes (2-2.5cm), n=20</td>
</tr>
<tr>
<td>NTP-3</td>
<td>Dec-2009</td>
<td>Nahol Jadab R.P. School Khantal area, Kanchrapara</td>
<td>Bovine&amp; Bubaline: CBJ cows-6 Murrah buffaloes-7</td>
<td>CBJ Cow-1, 5 years</td>
<td>Rear teats</td>
<td>Florid non pedunculated warts (3-4cm), n=4 Ticks infestation</td>
</tr>
<tr>
<td>NTP-4</td>
<td>Dec-2009</td>
<td>Rabi Mondal R.P. School Khantal area, Kanchrapara</td>
<td>Bovine: CBJ cow-7 CBJ HF-2</td>
<td>CBJ HF-1, 3.5 year</td>
<td>Neck and eyes</td>
<td>Pedunculated warts on medial canthus of the eyes and on the neck (2-3cm), n=25</td>
</tr>
<tr>
<td>NTP-5</td>
<td>Dec-2009</td>
<td>Ram Adhar Jadav R.P. School Khantal area, Kanchrapara</td>
<td>Bovine&amp; Bubaline: HLX cow-10 Murrah buffalo-6</td>
<td>Murrah she buffalo-1, 4 years</td>
<td>Teats only</td>
<td>Diffuse frond type warts of varying sizes (1-2.5cm), n=10</td>
</tr>
<tr>
<td>NTP-6</td>
<td>Dec-2009</td>
<td>Kailash Jadab R.P. School Khantal area, Kanchrapara</td>
<td>Bovine&amp; Bubaline: CBJ cow-5 HLX Cow-4 Murrah buffalo-4</td>
<td>CBJ HF-1, 2.5 year</td>
<td>Ear and eyes</td>
<td>Round-dome shaped non pedunculated warts (2-3cm), n=12 Ecto parasitism with ticks</td>
</tr>
<tr>
<td>NTP-7</td>
<td>Dec-2009</td>
<td>Lambu Krishna R.P. School Khantal area, Kanchrapara</td>
<td>Bovine&amp; Bubaline: CBJ cow-5 CBJ HF-2 Murrah buffalo-6</td>
<td>CBJ HF-1, 1.5 year</td>
<td>Vertebral column (back)</td>
<td>Big size (6.5cm) cauliflower like pedunculated wart, n=1</td>
</tr>
<tr>
<td>NTP-8</td>
<td>Dec-2009</td>
<td>Rambilas Jadab R.P. School Khantal area, Kanchrapara</td>
<td>Bubaline: MB HF-2 MB She Buff-5</td>
<td>Murrah buffalo-1, 4 years</td>
<td>Teats only</td>
<td>Frond type non pedunculated warts (2-3 cm), n=12</td>
</tr>
<tr>
<td>NTP-9</td>
<td>Dec-2009</td>
<td>Narod Jadab R.P. School Khantal area, Kanchrapara</td>
<td>Bovine&amp; Bubaline: CBJ cow-5 CBJ HF-2</td>
<td>CBJ HF-1, 1.5 year</td>
<td>Fore limbs and eyes</td>
<td>Clusters of pedunculated papillomas (2-3.5cm) approx. n = 70 Ticks infestation</td>
</tr>
<tr>
<td>NTP</td>
<td>Date</td>
<td>Source</td>
<td>Treatment</td>
<td>Therapy</td>
<td></td>
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<tr>
<td>NTP-10</td>
<td>Dec-2009</td>
<td>Kapil Jadab R.P. School Kanchrapara</td>
<td>Multiple elevated pedunculated warts (4-5 cm) attached by broad base, n=12</td>
<td>Levamisol therapy</td>
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<tr>
<td>NTP-11</td>
<td>Dec-2009</td>
<td>Mathura Jadab R.P. School Kanchrapara</td>
<td>Medial canthus of left eye</td>
<td>Auto-hemotherapy</td>
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<tr>
<td>NTP-12</td>
<td>Dec-2009</td>
<td>Bikash Pandit R.P. School Kanchrapara</td>
<td>Peri orbital region</td>
<td>Ivermectin therapy</td>
<td></td>
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<tr>
<td>NTP-13</td>
<td>Dec-2009</td>
<td>Bimal Jadab R.P. School Kanchrapara</td>
<td>Ear base (left ear)</td>
<td>Surgical cure</td>
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<td>NTP-14</td>
<td>Dec-2009</td>
<td>Tinku Jadab R.P. School Kanchrapara</td>
<td>Outside the medial canthus of both eyes</td>
<td>Auto-hemotherapy</td>
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<tr>
<td>NTP-15</td>
<td>Dec-2009</td>
<td>Rajesh Jadab R.P. School Kanchrapara</td>
<td>Shoulder, back and barrel</td>
<td>Injectable Ivermectin therapy</td>
<td></td>
<td></td>
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<tr>
<td>NTP-16</td>
<td>Dec-2009</td>
<td>Sambhu Dey Dengapara, Kanchrapara</td>
<td>Head, neck and thorax</td>
<td>Injectable Ivermectin therapy</td>
<td></td>
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<td>NTP-17</td>
<td>Dec-2009</td>
<td>Rajes Baidya Subal Smriti Club area, Kanchrapara</td>
<td>Teats only</td>
<td>Auto-hemotherapy</td>
<td></td>
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<tr>
<td>NTP-18</td>
<td>Dec-2009</td>
<td>Rajen Pal Dharambir colony, Kanchrapara</td>
<td>Hip region and right axilla</td>
<td>Homeopathic remedy</td>
<td></td>
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<tr>
<td>NTP-19</td>
<td>Dec-2009</td>
<td>Bisu Prasad Kalinagar Road, Kanchrapara</td>
<td>Dorsal thorax, back and barrel</td>
<td>Injectable Ivermectin therapy</td>
<td></td>
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<tr>
<td>No.</td>
<td>Date</td>
<td>Location</td>
<td>Owner</td>
<td>Breed</td>
<td>Age</td>
<td>Site of Infection</td>
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<tr>
<td>NTP-20</td>
<td>Dec-2009</td>
<td>Pravu Jadab Dengapra, Kanchrapara</td>
<td>Bovine:7, CBJ-5, Bubaline:6, MFB-6</td>
<td>Cow-6</td>
<td>Teats only</td>
<td>Filiform warts (3-6 cm), n=20 + Ectoparasitism</td>
</tr>
<tr>
<td>NTP-21</td>
<td>Dec-2009</td>
<td>Ajit Kri Pathak Hazinagar, 24 PGN (N)</td>
<td>Bovine:9, CBJ-5, Hlx-2, CBJ-7, MFB-5</td>
<td>Cow-6</td>
<td>Neck, back and scapula</td>
<td>Hyperkeratotic pedunculated warts, n=21 + ectoparasitism</td>
</tr>
<tr>
<td>NTP-22</td>
<td>Dec-2009</td>
<td>Barin Ghosh Chakla, Chandua</td>
<td>Bovine:7, ND Cow-3, Hlx HF-3, ND FC-1</td>
<td>Cow-6</td>
<td>Dorsal thorax and lower fore legs</td>
<td>Erosive pedunculated warty lesions (3-4 cm), n=15 + mange infection</td>
</tr>
<tr>
<td>NTP-23</td>
<td>Dec-2009</td>
<td>Amulya Kri Ghosh Dogachia, Naihatati</td>
<td>Bovine:8, CBJ Cow-4, ND Cow-2, CBJ HF-2</td>
<td>Cow-6</td>
<td>Teats only</td>
<td>Rice grain (2-3 cm) type, n=8</td>
</tr>
<tr>
<td>NTP-24</td>
<td>Dec-2009</td>
<td>Raghubir Prasad Kampa, Bijpur</td>
<td>Bovine:8, ND Cow-4, ND BK-2, Gir HF-2</td>
<td>Cow-6</td>
<td>Head and neck</td>
<td>Spherical mass with filiform papillary growths, non pedunculated (2-3 cm), n=5</td>
</tr>
<tr>
<td>NTP-25</td>
<td>Dec-2009</td>
<td>Susil Kri Das Govindapur, Kholapota, Basirhat</td>
<td>Bovine:6, ND Cow-3, ND HF-1, ND MC-2</td>
<td>Cow-6</td>
<td>Inter-scapular region</td>
<td>Broadly pedunculated warts (4-4.5 cm), n=12</td>
</tr>
<tr>
<td>NTP-26</td>
<td>Feb-2010</td>
<td>Achia Mondal Chardakilberia, Janakalyan WMPCS</td>
<td>Bovine:7, ND Cow-4, Gir HF-1</td>
<td>Cow-6</td>
<td>Skin of the eyelids, fore limbs and digits</td>
<td>Nodular and irregular, multiple pedunculated warts (2-2.5 cm), n=32</td>
</tr>
<tr>
<td>NTP-27</td>
<td>Feb-2010</td>
<td>Radha Kanta Pal Chardakilberia, Janakalyan WMPCS</td>
<td>Bovine:7, ND Cow-4, Gir HF-2, MD FC-1</td>
<td>Cow-6</td>
<td>Foot warts on hind limbs</td>
<td>Highly papillomatous pedunculated digital dermal lesions densely covered with filiform papillary growths, n=16</td>
</tr>
<tr>
<td>NTP-28</td>
<td>Feb-2010</td>
<td>Renuka Biswas Chardakilberia, Janakalyan WMPCS</td>
<td>Bovine:7, ND Cow-5, Gir HF-2</td>
<td>Cow-6</td>
<td>Proximal border of inter-digital space (hind limbs)</td>
<td>Foot wart (filiform) with papillary projections, pedunculated type, n=1</td>
</tr>
<tr>
<td>NTP-29</td>
<td>Feb-2010</td>
<td>Minati Biswas Chardakilberia, Janakalyan WMPCS</td>
<td>Bovine:6, RS Cow-2, RS HF-1, ND Cow-3</td>
<td>Cow-6</td>
<td>Neck and brisket</td>
<td>Cluster of non pedunculated warts (3-4 cm), n=20</td>
</tr>
<tr>
<td>NTP-30</td>
<td>Feb-2010</td>
<td>Suchitra Dhal Kamalpur WMPCS, Kamalpur</td>
<td>Bovine:6, RS Cow-3, RS HF-2, ND Bull-1</td>
<td>Cow-6</td>
<td>Wart at the point of elbow</td>
<td>Big (6cm) cauliflower like pedunculated wart, n=1</td>
</tr>
<tr>
<td>NTP</td>
<td>Date</td>
<td>Mentor</td>
<td>Location</td>
<td>Bovine:</td>
<td>Age:</td>
<td>Location of Warts:</td>
</tr>
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<tr>
<td>NTP-31</td>
<td>Feb-2010</td>
<td>Josna Mistri</td>
<td>Kamalpur WMPCS, Kamalpur</td>
<td>Bovine:5</td>
<td>ND Cow-2, ND Bull-1, ND HF-2</td>
<td>ND Sub adult bull-1.2 years</td>
</tr>
<tr>
<td>NTP-32</td>
<td>Feb-2010</td>
<td>Januma Bacher</td>
<td>Kamalpur WMPCS, Kamalpur</td>
<td>Bovine:7</td>
<td>ND Cow-4, ND FC-1, ND MC-1, CBJ Cow-1</td>
<td>ND MC-1, 11 Months</td>
</tr>
<tr>
<td>NTP-33</td>
<td>Feb-2010</td>
<td>Amita Sana</td>
<td>Kamalpur WMPCS, Kamalpur</td>
<td>Bovine:6</td>
<td>RS Cow-2, RS HF-1, ND Cow-3</td>
<td>RS HF-1, 2.5 Years</td>
</tr>
<tr>
<td>NTP-34</td>
<td>Feb-2010</td>
<td>Purnima Kha</td>
<td>Kamalpur WMPCS, Kamalpur</td>
<td>Bovine:7</td>
<td>CBJ Cow-3, CBJ HF-3, ND Cow-1</td>
<td>CBJ HF-1, 2.5 Years</td>
</tr>
<tr>
<td>NTP-35</td>
<td>March-2010</td>
<td>Goutam Halder Chalta Beria</td>
<td>Beria</td>
<td>Bovine:7</td>
<td>ND Cow-4, Gir HF-3</td>
<td>Gir HF-1, 3 Years</td>
</tr>
<tr>
<td>NTP-36</td>
<td>March-2010</td>
<td>Sk Bablu Chalta Beria</td>
<td>Beria</td>
<td>Bovine:7</td>
<td>ND Cow-3, CBJ HF-2, ND BK-2</td>
<td>CBJ HF-1, 2.5 Years</td>
</tr>
<tr>
<td>NTP-37</td>
<td>March-2010</td>
<td>Md Narul Haque Chalta Beria</td>
<td>Beria</td>
<td>Bovine:7</td>
<td>CBJ Cow-3, CBJ HF-3, ND Cow-1</td>
<td>CBJ HF-1, 2.5 Years</td>
</tr>
<tr>
<td>NTP-38</td>
<td>March-2010</td>
<td>Sujan Saha Chalta Beria</td>
<td>Beria</td>
<td>Bovine:8</td>
<td>ND Cow-4, Gir HF-2, Gir MC-2</td>
<td>Gir HF-2.5 Year</td>
</tr>
<tr>
<td>NTP-39</td>
<td>March-2010</td>
<td>Prasenjit Ghosh Hazinagar</td>
<td>Hazinagar</td>
<td>Bovine:5</td>
<td>ND Cow-2, Gir HF-2, Gir FC-1</td>
<td>Gir HF-3 Years</td>
</tr>
<tr>
<td>NTP-40</td>
<td>March-2010</td>
<td>Sanjeeb Kr Pathak Hazinagar</td>
<td>Hazinagar</td>
<td>Bovine:7</td>
<td>CBJ Cow-3, CBJ HF-3, ND Cow-1</td>
<td>CBJ HF-1, 2.5 Years</td>
</tr>
<tr>
<td>NTP-41</td>
<td>March-2010</td>
<td>Barin Ghosh Chakla, Chandua</td>
<td>Chakla, Chandua</td>
<td>Bovine:5</td>
<td>ND Cow-3, Gir HF-2</td>
<td>Gir HF-1.5 Year</td>
</tr>
<tr>
<td>NTP-42</td>
<td>March-2010</td>
<td>Sushil Kr Das Govindapur Kholapota,</td>
<td>Govindapur Kholapota,</td>
<td>Bovine:7</td>
<td>ND Cow-3, CBJ</td>
<td>CBJ HF-1, 2.5 Years</td>
</tr>
<tr>
<td>NTP-43</td>
<td>May-2010</td>
<td>Md. Firoz Baidya, Fazilpur, Deyganga</td>
<td>Basirhat</td>
<td>HF-3, CBJ FC-1</td>
<td>Bovine:5 ND Cow-2, Gir HF-2, Gir FC-1</td>
<td>Ear tips and periorbital region</td>
</tr>
<tr>
<td>NTP-44</td>
<td>May-2010</td>
<td>Sadekur Rahaman Ganguria, Deganga</td>
<td>Basirhat</td>
<td>Bovine:5 ND Cow-2, Gir HF-2, Gir FC-1</td>
<td>CBJ HF-1, 2.5 Years</td>
<td>Fore head and hind left leg</td>
</tr>
<tr>
<td>NTP-45</td>
<td>May-2010</td>
<td>Md. Keramat Joypur, Barasat</td>
<td>Basirhat</td>
<td>Bovine:5 ND Cow-2, Gir HF-2, Gir FC-1</td>
<td>Gir HF-1.5 Year</td>
<td>Right side of the abdomen and hip region</td>
</tr>
<tr>
<td>NTP-46</td>
<td>May-2010</td>
<td>Md. Ayen Ali, Joypur, Barasat</td>
<td>Basirhat</td>
<td>Bovine:5 ND Cow-2, Gir HF-2, Gir FC-1</td>
<td>CBJ HF-1, 2.5 Years</td>
<td>Neck and Shoulder</td>
</tr>
<tr>
<td>NTP-47</td>
<td>May-2010</td>
<td>Saiful Islam Mollah, Joypur, Barasat</td>
<td>Basirhat</td>
<td>Bovine:8 ND Cow-4, ND BK-2, ND FC-2</td>
<td>ND HF-1, 2.5 Years</td>
<td>Hind lower limbs</td>
</tr>
<tr>
<td>NTP-48</td>
<td>May-2010</td>
<td>Md. Firoz Baidya Joypur, Barasat</td>
<td>Basirhat</td>
<td>Bovine:7 CBJ Cow-3, CBJ HF-1, ND Cow-3</td>
<td>CBJ HF-1, 2.5 Years</td>
<td>Fore limbs</td>
</tr>
<tr>
<td>NTP-49</td>
<td>July-2010</td>
<td>Shyamal Ghosh Ghora rash, Jafarpur, Barasat</td>
<td>Basirhat</td>
<td>Bovine:6 Bubaline:7 CBJ Cow-4, CBJ FC-2 MBF-7</td>
<td>CBJ FC-10 Months</td>
<td>Right side of the thorax and abdomen</td>
</tr>
<tr>
<td>NTP-50</td>
<td>July-2010</td>
<td>Arijit Tarafder, Nathati, Barasat</td>
<td>Basirhat</td>
<td>Bovine:5 ND Cow-2, Gir HF-2, Gir FC-1</td>
<td>Gir HF-1.5 Year</td>
<td>Above nostril and periorbital region</td>
</tr>
<tr>
<td>NTP-51</td>
<td>July-2010</td>
<td>Aium Haque, Joypur, Barasat</td>
<td>Basirhat</td>
<td>Bovine:5 ND Cow-2, Gir HF-2, Gir FC-1</td>
<td>Gir HF-1.5 Year</td>
<td>Below the eyes and poll region</td>
</tr>
<tr>
<td>NTP-52</td>
<td>July-2010</td>
<td>Tanujit Kumar Gain, Niveditapally, Nowapara, Barasat.</td>
<td>Basirhat</td>
<td>Bovine:7 CBJ Cow-2, ND Cow-3, CBJ HF-2</td>
<td>CBJ HF-1, 2.5 Years</td>
<td>Left neck and shoulder</td>
</tr>
<tr>
<td>NTP-53</td>
<td>July-2010</td>
<td>Rabindra Nath Ghosh, Atisara, Salitaha, Naihati</td>
<td>Basirhat</td>
<td>Bubaline:7 MBHF-2, MB Lactating BF-5</td>
<td>Murrah HF-1, 3 Years</td>
<td>Back and left fore leg</td>
</tr>
<tr>
<td>NTP</td>
<td>Date</td>
<td>Location</td>
<td>Age (Years)</td>
<td>Location</td>
<td>Affected Body Part</td>
<td>Wart Description</td>
</tr>
<tr>
<td>------</td>
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</tr>
<tr>
<td>NTP-54</td>
<td>July-2010</td>
<td>Uttam Ghosh, Atisara, Shalidaha, Naihati</td>
<td>CBJ HF-1, 2.5 Years</td>
<td>Right neck and right fore limb</td>
<td>Dome shaped non pedunculated warts (2.5-3cm), n=17</td>
<td>3 months</td>
</tr>
<tr>
<td>NTP-55</td>
<td>July-2010</td>
<td>Sanjib Ghosh, 8-Bijoy Nagar, Naihati</td>
<td>CBJ HF-1, 2.5 Years</td>
<td>Fore head and thorax</td>
<td>Cauliflower-like (2.5cm-3cm), n=8</td>
<td>3 months</td>
</tr>
<tr>
<td>NTP-56</td>
<td>July-2010</td>
<td>Sk Jahangir Alam Suria, Asokenagar</td>
<td>CBJ FC-12 Months</td>
<td>Left side of the neck, dewlap and shoulder</td>
<td>Cauliflower-like pedunculated warts (2.5cm-3cm), n=18</td>
<td>2 months</td>
</tr>
<tr>
<td>NTP-57</td>
<td>July-2010</td>
<td>Ram Ayodhya Yadav Jahinalpalli, Barrackpore</td>
<td>CBJ FC-10 Months</td>
<td>Right side abdomen and lumber region</td>
<td>Cauliflower-like pedunculated warts (2.5cm-3cm), n=16</td>
<td>2 months</td>
</tr>
<tr>
<td>NTP-58</td>
<td>August-2010</td>
<td>Raju Tiwary Jahinalpalli, Barrackpore</td>
<td>CBJ sub adult bull (2 years)</td>
<td>Peri anal region and loin</td>
<td>Cauliflower-like pedunculated warts (2.5cm-3cm), n=8</td>
<td>3 months</td>
</tr>
<tr>
<td>NTP-59</td>
<td>August-2010</td>
<td>Sahanur Haque Kaipukur, N-24 pargana</td>
<td>CBJ HF-1, 3.5 Years</td>
<td>Perivulval and left axilla</td>
<td>Round, dome shaped non pedunculated warts(2-2.5cm), n=9</td>
<td>5 months</td>
</tr>
<tr>
<td>NTP-60</td>
<td>August-2010</td>
<td>Rajendra Das South Betpur, N-24 Pargana</td>
<td>CBJ HF-1, 2.5 Years</td>
<td>Below eye and left ear pinna</td>
<td>Cauliflower-like pedunculated wart (2.5cm-3cm), n=8</td>
<td>4 months</td>
</tr>
</tbody>
</table>
Table-18: Breed, age group and sex wise synopsis of cutaneous wart (CWT) and teat papilloma (TP) in cattle and buffalo in North 24 Pargana District of West Bengal

<table>
<thead>
<tr>
<th>Breeds affected</th>
<th>No. of susceptible animals with in the bp affected herds</th>
<th>Total No of clinical wart cases</th>
<th>Sex</th>
<th>Age group</th>
<th>No of CWT cases</th>
<th>No of TP cases</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Calf hood</td>
<td>Sub-adult</td>
<td>Adult</td>
</tr>
<tr>
<td>Indigenous and non-descript cattle</td>
<td>41</td>
<td>18</td>
<td>F-15</td>
<td>-</td>
<td>15</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>M-3</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Cross breed cattle (CBJ)</td>
<td>24</td>
<td>30</td>
<td>F-29</td>
<td>6</td>
<td>19</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>M-1</td>
<td>-</td>
<td>1</td>
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</tr>
<tr>
<td>Pure breed cattle</td>
<td>-</td>
<td>-</td>
<td></td>
<td>F</td>
<td>-</td>
<td>-</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>M</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Cross breed cattle (HLX)</td>
<td>10</td>
<td>3</td>
<td>F-3</td>
<td>-</td>
<td>3</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>M</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Buffalo</td>
<td>-</td>
<td>9</td>
<td>F-9</td>
<td>-</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>M</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Grand Total</td>
<td>75</td>
<td>60</td>
<td>F-56</td>
<td>7</td>
<td>44</td>
<td>9</td>
</tr>
<tr>
<td>Sl No</td>
<td>Period of survey</td>
<td>Owners name and address</td>
<td>Species affected</td>
<td>Category of animals affected</td>
<td>Distribution of wart</td>
<td>Clinical observation</td>
</tr>
<tr>
<td>-------</td>
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<td>---------------------</td>
</tr>
<tr>
<td>STP-1</td>
<td>December-2009</td>
<td>Sk Mozammel Hussain Aviramur, Budge Budge</td>
<td>Bovine:8, CBJ Cow-2, CBJ HF-1, ND Cow-5</td>
<td>CBJ HF-1; 2 years</td>
<td>Face and ears</td>
<td>Small (0.5-2 cm) nodular, non pedunculated warts (n = 9)</td>
</tr>
<tr>
<td>STP-2</td>
<td>December-2009</td>
<td>SK. Azizu Rahaman Aviramur, Budge Budge</td>
<td>Bovine:6, ND Cow-3, ND HF-3</td>
<td>ND HF-1; 2 years</td>
<td>Ear and eyes</td>
<td>Small (1-1.5 cm) cauliflower like pedunculated warts (n = 10)</td>
</tr>
<tr>
<td>STP-3</td>
<td>December-2009</td>
<td>Govinda Halder Futigoda</td>
<td>Bovine:8, ND Cow-4, ND Cow-2, ND HF-2</td>
<td>ND MC-1; 8 Months</td>
<td>Neck region with bilateral affection</td>
<td>Non pedunculated warts (4-5 cm) as if bunch of grapes, n &gt; 40</td>
</tr>
<tr>
<td>STP-4</td>
<td>December-2009</td>
<td>Sisir Das Durgapur, Mayapur</td>
<td>Bovine:6, Gir HF-3, ND Cow-3</td>
<td>Gir HF-1; 2 years</td>
<td>Fore limbs</td>
<td>Densely arranged, multiple (n = 25) dome shaped non pedunculated warts (1-2 cm)</td>
</tr>
<tr>
<td>STP-5</td>
<td>December-2009</td>
<td>Biswajit Sarder Kaikhal, Near Kaikhal Ashram, Kultali</td>
<td>Bovine:7, CBJ HF-2, ND Cow-5</td>
<td>CBJ Heifer-1; 2.5 years</td>
<td>Around the eyes (peri orbital region)</td>
<td>Few (n = 6) small (1.5-3 cm) nodular non pedunculated warts</td>
</tr>
<tr>
<td>STP-6</td>
<td>December-2009</td>
<td>Pranab Gayen Madhusudanpur, Kultali</td>
<td>Bovine:6, Gir HF-3, ND Cow-3</td>
<td>Gir HF-1; 2 years</td>
<td>Perineum</td>
<td>Small (3-5 cm) cauliflower like warts (n = 16)</td>
</tr>
<tr>
<td>STP-7</td>
<td>Dec'09</td>
<td>Dipankar Gayen Madhusudanpur, Kultali</td>
<td>Bovine:7, ND Cow-5, ND HF-2</td>
<td>ND Heifer-1; 2 years</td>
<td>Paragenital area</td>
<td>Small (1-3.5 cm) cauliflower like warts (n = 6)</td>
</tr>
<tr>
<td>STP-8</td>
<td>Dec’09</td>
<td>Nasir Mallick B. Chandipur</td>
<td>Bovine:6, ND Cow-3, ND MC-2, ND HF-1</td>
<td>ND MC-1; 8 Months</td>
<td>Head and ears</td>
<td>Small (1 cm) dome shaped warts (n = 6)</td>
</tr>
<tr>
<td>STP-9</td>
<td>Dec'09</td>
<td>Debaprasad Mondal Payrani; Jugdia, Magrahath</td>
<td>Bovine:7, CBJ HF-2, ND Cow-5</td>
<td>CBJ HF-1; 2.5 years</td>
<td>Head, neck and belly</td>
<td>Multiple nodular warts (2-2.5 cm), n = 21</td>
</tr>
<tr>
<td>STP-10</td>
<td>Dec'09</td>
<td>Krishnapada Halder Canning, Matla 4 no ward</td>
<td>Bovine:7, ND Cow-3, ND Cow-2, ND HF-2</td>
<td>ND MC-1; 8 Months</td>
<td>Ear pinna and peri orbital area</td>
<td>Small (1.5-2 cm) cauliflower-like, n = 18</td>
</tr>
<tr>
<td>Case No.</td>
<td>Date</td>
<td>Name of the Patient</td>
<td>Breed</td>
<td>Age</td>
<td>Affected Area</td>
<td>Description</td>
</tr>
<tr>
<td>----------</td>
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<tr>
<td>STP-11</td>
<td>Dec '09</td>
<td>Asit Kayal Manmathanagar, Gosaba</td>
<td>Bovine</td>
<td>9, ND Cow-5, ND HF-2, ND BK-2</td>
<td>ND HF-1; 2 years</td>
<td>Fore limbs and back</td>
</tr>
<tr>
<td>STP-12</td>
<td>Dec '09</td>
<td>Kalyan Kumar Guha, Chandrapur, Digha</td>
<td>Bovine</td>
<td>8, ND Cow-4, ND HF-3, ND BK-1</td>
<td>ND HF -1; 2 years</td>
<td>Neck</td>
</tr>
<tr>
<td>STP-13</td>
<td>Jan '10</td>
<td>Sachindranath Bhandari, Manmathapur Dholahat</td>
<td>Bovine</td>
<td>6, ND Cow-3, ND HF-1, ND MC-1</td>
<td>ND MC -1; 7 Months</td>
<td>Limbs and back</td>
</tr>
<tr>
<td>STP-14</td>
<td>Jan '10</td>
<td>Anukul Kall Sonatikuri, Tadihata</td>
<td>Bovine</td>
<td>7, CBJ HF-2, ND Cow-5</td>
<td>CBJ Heifer-1; 2 years</td>
<td>Eyes and ears</td>
</tr>
<tr>
<td>STP-15</td>
<td>Jan '10</td>
<td>Ashish Parokait, Jagadishpur, Mondirbazar</td>
<td>Bovine</td>
<td>6, ND Cow-3, ND HF-1, ND MC-1</td>
<td>ND MC -1; 1 Year</td>
<td>Neck and fore limbs</td>
</tr>
<tr>
<td>STP-16</td>
<td>Jan '10</td>
<td>Dibakar Porey, Umedpur, Chaulkhola</td>
<td>Bovine</td>
<td>6, ND Cow-3, ND HF-2</td>
<td>ND HF-1; 2.5 Year</td>
<td>Head and neck</td>
</tr>
<tr>
<td>STP-17</td>
<td>Jan '10</td>
<td>Gourhari Mondal, Umedpur, Chaulkhola</td>
<td>Bovine</td>
<td>7, CBJ HF-2, ND Cow-5</td>
<td>CBJ HF-1; 2 Years</td>
<td>Hind limbs</td>
</tr>
<tr>
<td>STP-18</td>
<td>Jan '10</td>
<td>Gopal Pramanik, Balkanathapur, Kulti</td>
<td>Bovine</td>
<td>6, ND Cow-3, ND HF-1</td>
<td>ND MC -1; 9 Months</td>
<td>Right hind leg</td>
</tr>
<tr>
<td>STP-19</td>
<td>Jan '10</td>
<td>Jogai Chand Datta, Krishnabagchipur, Kulti</td>
<td>Bovine</td>
<td>7, ND Cow-4, ND FC-2, ND Bull-1</td>
<td>NDFC-1;10 Months</td>
<td>Peri-orbital</td>
</tr>
<tr>
<td>STP-20</td>
<td>January-2010</td>
<td>Jhantu Halder, Krishnabagchipur,Kulti</td>
<td>Bovine</td>
<td>5, CBJ HF-2, CBJ Cow-2</td>
<td>CBJ Cow-1; 3 years</td>
<td>Paragenital</td>
</tr>
<tr>
<td>STP-21</td>
<td>Jan '10</td>
<td>Asraf Ali Mollah, Ramkrishnapur, Masjidbati</td>
<td>Bovine</td>
<td>7, CBJ HF-2, ND Cow-5</td>
<td>CBJ HF-1; 2.5 years</td>
<td>Axilla</td>
</tr>
<tr>
<td>STP-22</td>
<td>Jan '10</td>
<td>Sirajul Haque, Pakapolehat,24 PGN (S)</td>
<td>Bovine</td>
<td>6, Gir Cow-3, Gir HF-2, ND Cow-1</td>
<td>Gir HF-1; 2 years</td>
<td>Rima oris and neck</td>
</tr>
<tr>
<td>STP-23</td>
<td>Jan '10</td>
<td>Sourav Ganguly, Narayanpur,Canning,24</td>
<td>Bovine</td>
<td>5, ND Cow-3, ND FC-</td>
<td>ND MC-1; 8</td>
<td>Hip region and hind</td>
</tr>
<tr>
<td>STP</td>
<td>Year</td>
<td>Name</td>
<td>Species</td>
<td>Breed</td>
<td>Age</td>
<td>Site of Lesion</td>
</tr>
<tr>
<td>------</td>
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</tr>
<tr>
<td>STP-24</td>
<td>Jan'10</td>
<td>Ismail Ali Mondal Narikelkanga, Shyampr, Budge Budge</td>
<td>Bovine:7, CBJ FC-2, ND Cow-5</td>
<td>Cross bred FC-1, 11 Months</td>
<td>Lumber and distal hand legs</td>
<td>Rough spherical (3-3.5cm), n = 10</td>
</tr>
<tr>
<td>STP-25</td>
<td>Jan'10</td>
<td>Panchanan Naskar Belia, Kamalpur, Usthi</td>
<td>Bovine:7, RS Cow-2, HF-2, ND Cow-3</td>
<td>RS HF-1; 2 years</td>
<td>Right abdomen</td>
<td>Big (4-5cm) cauliflower-like warts, n = 8</td>
</tr>
<tr>
<td>STP-26</td>
<td>Jan'10</td>
<td>Prakash Ch. Mondal Mathakhal, Budge Budge</td>
<td>Bovine:7, CBJ HF-2, ND Cow-5</td>
<td>CBS HF-1, 3 Years</td>
<td>Flank and tail base</td>
<td>Dome shaped (2-2.5cm), n = 6</td>
</tr>
<tr>
<td>STP-27</td>
<td>Jan'10</td>
<td>Tarapada Sarkar Jalghata, Mathurapur,</td>
<td>Bovine:6, ND Cow-3, ND MC-2, ND HF-1</td>
<td>ND MC-1; 8 Months</td>
<td>Neck and back</td>
<td>Circular, rough, horny, sessile warts (3-5 cm), n = 9</td>
</tr>
<tr>
<td>STP-28</td>
<td>Jan'10</td>
<td>Koushik Halder Taipur, Mathurapur, 24 PGN (S)</td>
<td>Bovine:6, ND Cow-4, ND MC-2</td>
<td>ND MC-1; 11 Months</td>
<td>Face and neck</td>
<td>Circular to elongated, rough, sessile warts (2-2.5 cm), n = 8</td>
</tr>
<tr>
<td>STP-29</td>
<td>Jan'10</td>
<td>Khayrul Islam Khan Chandpur, Sonarpur</td>
<td>Bovine:6, Gir Cow-3, Gir HF-2, ND Cow-1</td>
<td>Gir HF-1; 2 years</td>
<td>Fore head and Rt. Fore leg</td>
<td>Roughly circular, elongated warts (3-4 cm) with horny projections, n = 23</td>
</tr>
<tr>
<td>STP-30</td>
<td>Jan'10</td>
<td>Sanat Naskar Champahati, Sonarpur</td>
<td>Bovine:7, ND Cow-4, Gir HF-2, ND HF-1</td>
<td>Gir Heifer; 2 years</td>
<td>Chest and abdomen</td>
<td>Bunch of grapes (4.5-5 cm), n = 12</td>
</tr>
<tr>
<td>STP-31</td>
<td>Jan'10</td>
<td>Sabir Ali Sarder Bhatpoya, Surjyapur Hat, Baruipur</td>
<td>Bovine:6, ND Cow-4, ND HF-2, ND BK-2</td>
<td>ND Heifer; 2 years</td>
<td>Medial sides of the thigh and axillary region</td>
<td>Round to elongated warts (2-3 cm) projecting like towel surface, n=8</td>
</tr>
<tr>
<td>STP-32</td>
<td>Jan'10</td>
<td>Dinabandhu Naskar Champahati, Sonarpur</td>
<td>Bovine:7, ND Cow-4, Gir HF-2, ND HF-1</td>
<td>Gir Heifer; 2 years</td>
<td>Extensive lesions on both sides of the neck, poll and around eyes</td>
<td>Circular to elongated, rough, dry, horny, and sessile warts (3–4cm), n=34</td>
</tr>
<tr>
<td>STP-33</td>
<td>Jan'10</td>
<td>Subharthi Mondal Chandpup, Baruipur</td>
<td>Bovine:6, RS Cow-3, RS HF-3</td>
<td>RS HF-1; 2 years</td>
<td>Warts around the vulva, anus and tail</td>
<td>Bunch of grapes (4.5-5 cm), n=12</td>
</tr>
<tr>
<td>STP-34</td>
<td>Jan'10</td>
<td>Sannyasy Halder GhontBokultala, Mathurapur,</td>
<td>Bovine:7, CBJ HF-2, ND Cow-5</td>
<td>CBS HF-1, 2.5 Years</td>
<td>Neck, shoulder and abdomen</td>
<td>Benign proliferative nodular lesions (1-2cm) on neck, shoulder and groin, n = 7</td>
</tr>
<tr>
<td>STP-35</td>
<td>March'10</td>
<td>Soumya Sanati Durgapur, Mayapur,BudgeBudge</td>
<td>Bovine:6, ND Cow-4, ND MC-2</td>
<td>ND MC-1; 8 Months</td>
<td>Clusters of papillomas outside the medial canthus of both eyes</td>
<td>Flattened (2-3cm), n =14</td>
</tr>
<tr>
<td>STP</td>
<td>March’10</td>
<td>Tapan Mondal</td>
<td>Chakbhukraman, Dhalipara, Joka, 24 PGN (S)</td>
<td>Bovine:6, CBJ HF-2, ND Cow-4</td>
<td>CBJ HF-1, 2.5 Years</td>
<td>Poll, around eyes and face</td>
</tr>
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<tr>
<td>STP</td>
<td>March’10</td>
<td>Arpan Mukherjee</td>
<td>Joka, Baburbagan, Thakurpukur, 24 PGN (S)</td>
<td>Bovine:7, CBJ HF-2, ND Cow-5</td>
<td>CBJ HF-1, 2.5 Years</td>
<td>Head, neck and thorax</td>
</tr>
<tr>
<td>STP</td>
<td>March’10</td>
<td>Bishnupada Naskar</td>
<td>Deuli-Sultanpur, Ghorahata, 24 PGN (S)</td>
<td>Bovine:4, ND Cow-3, ND FC-2</td>
<td>ND HF-1; 2 years</td>
<td>Neck and inter-scapular region</td>
</tr>
<tr>
<td>STP</td>
<td>March’10</td>
<td>Arpan Mukherjee</td>
<td>Joka, Baburbagan, Thakurpukur, 24 PGN (S)</td>
<td>Bovine:5, ND Cow-3, ND HF-2, ND MC-1</td>
<td>ND MC-1; 8 Months</td>
<td>Solely on the head</td>
</tr>
<tr>
<td>STP</td>
<td>March’10</td>
<td>Anima Mali</td>
<td>Kaikhali-2 no GP, 24PGN(S)</td>
<td>Bovine:6, CBJ HF-2, ND Cow-2, ND BK-2</td>
<td>CBJ FC-1, 8 Months</td>
<td>Solely on ear pinnae and around eyes</td>
</tr>
<tr>
<td>STP</td>
<td>March-2010</td>
<td>Mongal Naskar</td>
<td>Kaikhali-2 no GP, Kultali, 24PGN(S)</td>
<td>Bovine:7, CBJ FC-2, ND Cow-5</td>
<td>CBJ FC-1, 8 Months</td>
<td>Fore foot, thorax and around eyes</td>
</tr>
<tr>
<td>STP</td>
<td>March-2010</td>
<td>Dibakar Naskar</td>
<td>Kaikhali-2 no GP, 24PGN(S)</td>
<td>Bovine:4, Sahiwal HF-3, ND Cow-1</td>
<td>Indigenous Heifer; 2.5 years</td>
<td>Face, muzzle and fore foot</td>
</tr>
<tr>
<td>STP</td>
<td>March-2010</td>
<td>Shusanta Malu</td>
<td>Kaikhali Ashram para, Kultali, 24PGN(S)</td>
<td>Bovine:6, ND Cow-4, ND MC-2</td>
<td>ND MC; 10 Months</td>
<td>Face, muzzle and fore foot</td>
</tr>
<tr>
<td>STP</td>
<td>March-2010</td>
<td>Dayal Sardar</td>
<td>Kaikhali-2 no GP, Kultali, 24PGN(S)</td>
<td>Bovine:9, CBJ FC-2, CBJ HF-1, ND Cow-6</td>
<td>CBJ Heifer; 3 years</td>
<td>Extensive warts on face, head, thorax and belly</td>
</tr>
<tr>
<td>STP</td>
<td>March-2010</td>
<td>Baburam Mondal</td>
<td>Kaikhali-2 no GP, Kultali, 24PGN(S)</td>
<td>Bovine:6, ND BK-2, ND Cow-4</td>
<td>ND Bullock-1, 4 years</td>
<td>Both sides of the neck and temporal region</td>
</tr>
<tr>
<td>STP</td>
<td>March-2010</td>
<td>Balaram Mondal</td>
<td>Kaikhali-2 no GP, Kultali, 24PGN(S)</td>
<td>Bovine:6, ND Cow-4, ND MC-2</td>
<td>ND MC-1, 11 Months</td>
<td>Left hind foot and scrotal sack</td>
</tr>
<tr>
<td>STP-48</td>
<td>March-2010</td>
<td>Shankar Naskar</td>
<td>Kaikhali-2 no GP, Kultali, 24PGN(S)</td>
<td>Bovine:6, ND Cow-3, CBJ HF-2, CBJ Cow-1</td>
<td>CBJ Heifer; 2 years</td>
<td>Extensive warts on chest, back and hind limbs</td>
</tr>
<tr>
<td>STP-49</td>
<td>April-2010</td>
<td>Pravakar Halder</td>
<td>Kaikhali-2 no GP, Kultali, 24PGN(S)</td>
<td>Bovine:5, RS Cow-2, RS HF-1, ND BK-2</td>
<td>Red Sindhi cow-1, 3 Years</td>
<td>Around teat orifices of all four teats</td>
</tr>
<tr>
<td>STP-50</td>
<td>April-2010</td>
<td>Swapna Halder</td>
<td>Kaikhali-1 NO GP, Kultali, 24 PGN (S)</td>
<td>Bovine:7, ND Cow-4, CBJ Cow-1, CBJ HF-2</td>
<td>CBJ Cow-1, 3 Years</td>
<td>Udder and fore teats</td>
</tr>
<tr>
<td>STP-51</td>
<td>April-2010</td>
<td>Promila Naskar</td>
<td>Kaikhali-2 no GP, Kultali, 24PGN(S)</td>
<td>Bovine:6, ND Cow-5, ND FC-1</td>
<td>ND FC-1, 12 Months</td>
<td>Medial canthus of left eye and right ear pinna</td>
</tr>
<tr>
<td>STP-52</td>
<td>April-2010</td>
<td>Amala Das</td>
<td>Kaikhali-2 no GP, Kultali, 24PGN(S)</td>
<td>Bovine:8, ND BK-2, ND Cow-4, ND FC-2</td>
<td>ND Bullock-1, 3 Years</td>
<td>Solely on head</td>
</tr>
<tr>
<td>STP-53</td>
<td>April-2010</td>
<td>Shyamal Baidya</td>
<td>Kaikhali-5 NO GP,Kultali, 24 PGN (S)</td>
<td>Bovine:9, ND Cow-6, ND FC-3</td>
<td>ND FC-1, 10 Months</td>
<td>Solely on head</td>
</tr>
<tr>
<td>STP-54</td>
<td>April-2010</td>
<td>Monica Mondal</td>
<td>Kaikhali-2 no GP, Kultali, 24PGN(S)</td>
<td>Bovine:7, ND Cow-4, CBJ Cow-1, CBJ HF-2</td>
<td>CBJ HF-1, 2 years</td>
<td>Solely on head and shoulder</td>
</tr>
<tr>
<td>STP-55</td>
<td>April-2010</td>
<td>Shakti Mandal</td>
<td>Kaikhali-1 no GP, Kultali, 24PGN(S)</td>
<td>Bovine:5, CBJ Cow-2, CBJ HF-1, ND Cow-2</td>
<td>CBJ HF-1, 2 years</td>
<td>Solely on head</td>
</tr>
<tr>
<td>STP-56</td>
<td>April-2010</td>
<td>Sukumar Naskar</td>
<td>Kaikhali-1 NO GP,Kultali, 24 PGN (S)</td>
<td>Bovine:7, ND Cow-5, ND FC-2, ND BK-2</td>
<td>ND FC-1, 12 Months</td>
<td>Ventral neck, face and shoulder region</td>
</tr>
<tr>
<td>STP-57</td>
<td>April-2010</td>
<td>Goutam Kayal</td>
<td>Purba Gurguria, Kultali, 24 PGN (S)</td>
<td>Bovine:4, ND Cow-3, ND FC-1</td>
<td>ND dry cow-1, 3 Years</td>
<td>Chest, abdomen and peri-vulval region</td>
</tr>
<tr>
<td>STP-58</td>
<td>June-2010</td>
<td>Bidyut Kr Naskar</td>
<td>Kundkhali, Kultali, 24 PGN (S)</td>
<td>Bovine:5, CBJ Cow-2, CBJ HF-1, ND Cow-2</td>
<td>CBJ HF-1, 2.5 years</td>
<td>Abdomen, udder and perigenital region</td>
</tr>
<tr>
<td>STP-59</td>
<td>June-2010</td>
<td>Gourhari Naskar</td>
<td>Arun Nagar, Chatramaladi,</td>
<td>Bovine:4, ND Cow-3, ND FC-1</td>
<td>ND FC-1, 9 Months</td>
<td>Neck, shoulder and belly</td>
</tr>
<tr>
<td>STP</td>
<td>Date</td>
<td>Animal Details</td>
<td>Clinical Details</td>
<td>Lesions</td>
<td>Duration</td>
<td>Severity</td>
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<tr>
<td>STP-60</td>
<td>June-2010</td>
<td>Jayanta Sardar, Arun Nagar, Chatramaldari, 24 PGN (S)</td>
<td>Bovine: 6, ND Cow-4, Gir HF-2</td>
<td>Gir Heifer-1, 1.5 Years</td>
<td>Head, face, neck and thorax</td>
<td>Extensive globoid tumours of varying sizes(2-5cm), n=28</td>
</tr>
<tr>
<td>STP-61</td>
<td>June-2010</td>
<td>Monikanchan Singha Purba Gurguria, Kultali, 24 PGN (S)</td>
<td>Bovine: 5, CBJ Cow-2, CBJ HF-1, ND Cow-2</td>
<td>CBJ HF-1, 2.5 Years</td>
<td>Shoulder, abdomen, medial side of left thigh and peri anal region</td>
<td>Circular, rough, dry, horny, sessile warts(2-3.5cm), n=24</td>
</tr>
<tr>
<td>STP-62</td>
<td>June-2010</td>
<td>Shyamal Das Purba Gurguria, Kultali, 24 PGN (S)</td>
<td>Bovine: 5, ND BK-2, ND Cow-4</td>
<td>ND Bullock-1, 3 Years</td>
<td>Neck, shoulder and belly</td>
<td>Extensive globoid tumours of varying sizes(2-5cm), n=28</td>
</tr>
<tr>
<td>STP-63</td>
<td>June-2010</td>
<td>Khokan Kr Sardar Purba Gurguria, Kultali, 24 PGN (S)</td>
<td>Bovine: 6, ND Cow-3, Gir HF-1, ND FC-2</td>
<td>Gir Heifer-1, 2.5 Years</td>
<td>Head, face, neck and thorax</td>
<td>Extensive globoid tumours of varying sizes(2-5cm), n=28</td>
</tr>
<tr>
<td>STP-64</td>
<td>June’10</td>
<td>Palash Naskar Kultali, 24 PGN (S)</td>
<td>Bovine: 5, ND Cow-2, ND BK-2, ND FC-1</td>
<td>ND FC-1, 9 Months</td>
<td>Head, around eyes, neck and thorax</td>
<td>Circular, rough, dry, horny, sessile warts(1.5-3.5cm), n=30</td>
</tr>
<tr>
<td>STP-65</td>
<td>June’10</td>
<td>Iyoti Mondal PurbaGurguria, Kultali, 24 PGN (S)</td>
<td>Bovine: 5, ND Cow-2, ND BK-2, ND FC-1</td>
<td>ND Bullock-1, 3 Years</td>
<td>Shoulder and back</td>
<td>Circular, rough, dry, horny, sessile warts(3-3.5cm), n=34</td>
</tr>
<tr>
<td>STP-66</td>
<td>June’10</td>
<td>Ramprasad Sardar Bantra, Joynagar, 24 PGN (S)</td>
<td>Bovine: 5, ND Cow-3, Gir HF-2</td>
<td>Gir Heifer-1, 2 Years</td>
<td>Head, around eyes, neck and thorax</td>
<td>Multiple(n=22) pedunculated globoid tumours with tough consistency of several mm size(3-4cm)</td>
</tr>
<tr>
<td>STP-67</td>
<td>June’10</td>
<td>Bappa Kr Pramank Bantra, Joynagar, 24 PGN (S)</td>
<td>Bovine: 6, ND Cow-3, Gir HF-1, ND FC-2</td>
<td>Gir Heifer-1, 1.5 Years</td>
<td>Head, around eyes, face, neck and thorax</td>
<td>Extensive lesions(2-3.5cm) in cluster, n=52</td>
</tr>
<tr>
<td>STP-68</td>
<td>Dec’10</td>
<td>Shankar Naskar Kaikhali,Kultali, 24 PGN (S)</td>
<td>Bovine: 4, CBJ Cow-2, CBJ HF-2</td>
<td>CBJ HF-1, 2.6 Years</td>
<td>Neck, abdomen and hand limbs</td>
<td>Circular, rough, dry, horny, sessile warts(2.3-5cm), n=24</td>
</tr>
<tr>
<td>STP-69</td>
<td>Dec’10</td>
<td>Bachaspati Das Kailaspur, Kultali, 24 PGN (S)</td>
<td>Bovine: 4, CBJ Cow-2, CBJ HF-2</td>
<td>CBJ HF-1, 2.0 Years</td>
<td>Face, neck and fore limbs</td>
<td>Extensive lesions(2-3.5cm) in cluster, n=32</td>
</tr>
<tr>
<td>STP-70</td>
<td>Dec’10</td>
<td>Mihar Deb Nath Gosaba, 24 PGN (S)</td>
<td>Bovine: 4, ND Cow-2, ND FC-2</td>
<td>ND FC-1, 9 Months</td>
<td>Neck, shoulder and back</td>
<td>Multiple(n=25) solid, cauliflower like tumours of several mm size(3-4cm)</td>
</tr>
<tr>
<td>STP-71</td>
<td>Dec’10</td>
<td>Rahul Alam Naskar</td>
<td>Bovine: 6, ND Cow-3, Gir HF-1</td>
<td>Gir Heifer-1, 3 Years</td>
<td>Abdomen, udder and peri-genital region</td>
<td>Extensive lesions(2-3.5cm) in cluster, n=32</td>
</tr>
<tr>
<td>STP-72</td>
<td>Dec’10</td>
<td>Koabati, Kultali, 24 PGN (S)</td>
<td>Bovine: 6, ND Cow-4, CBJ HF-2</td>
<td>CBJ HF-1, 2.5 Years</td>
<td>Head, inter-scapular region and fore limbs</td>
<td>Multiple (n=32) globoid tumours with tough consistency of several mm size (3-4 cm)</td>
</tr>
<tr>
<td>STP-73</td>
<td>Dec’10</td>
<td>Ram Kr Baidya Deulbari, Dehipur, Kultali, 24 PGN (S)</td>
<td>Bovine:4, ND Cow-2, ND FC-2</td>
<td>ND FC-1, 9 Months</td>
<td>Around eyes, ear tips and neck</td>
<td>Multiple (n=32) globoid tumours with tough consistency of several mm size (3-4 cm)</td>
</tr>
<tr>
<td>STP-74</td>
<td>Dec’10</td>
<td>Kartick Aus Kultali, 24 PGN (S)</td>
<td>Bovine:4, ND Cow-2, Gir H F-2</td>
<td>Gir Heifer-1, 2.0 Years</td>
<td>Front foot, ventral abdomen and base of the tail</td>
<td>Extensive lesions (2-3.5 cm) in cluster, n=32</td>
</tr>
<tr>
<td>STP-75</td>
<td>Dec’10</td>
<td>Mihir Halder Koabati, Kultali, 24 PGN (S)</td>
<td>Bovine:5, CBJ Cow-1, CBJ HF-2, ND Cow-2</td>
<td>CBJ HF-1, 2.5 Years</td>
<td>Poll, around eyes, face and vulva</td>
<td>Numerous round and elongated solid horny outgrowths (3-5 cm), n=36</td>
</tr>
<tr>
<td>STP-76</td>
<td>Feb’11</td>
<td>Swarup Dey Kalagachia, Sarisha, 24 PGN (S)</td>
<td>Bovine:4, ND Cow-2, ND FC-2</td>
<td>ND FC-1, 11 Months</td>
<td>Around eyes, ear tips and neck</td>
<td>Extensive lesions (2-3.5 cm) in cluster, n=32</td>
</tr>
<tr>
<td>STP-77</td>
<td>Feb’11</td>
<td>Palash Biswas Kantamari, 24 PGN (S)</td>
<td>Bovine:5, CBJ Cow-1, CBJ HF-2, ND Cow-2</td>
<td>CBJ HF-1, 2.5 Years</td>
<td>Head, inter-scapular region and fore limbs</td>
<td>Circular, rough, dry, horny, sessile warts (2-3.5 cm), n=24</td>
</tr>
<tr>
<td>STP-78</td>
<td>Feb’11</td>
<td>Susanta Roy Kantamari, 24 PGN (S)</td>
<td>Bovine:5, CBJ Cow-1, CBJ HF-2, ND Cow-2</td>
<td>CBJ HF-1, 2.5 Years</td>
<td>Neck, abdomen and hind limbs</td>
<td>Circular, rough, dry, horny, sessile warts (2-3.5 cm), n=24</td>
</tr>
<tr>
<td>STP-79</td>
<td>Feb’11</td>
<td>Utam Gayen Madhya Gurguria, Kultali, 24 PGN (S)</td>
<td>Bovine:5, ND Cow-3, ND FC-2</td>
<td>ND FC-1, 11 Months</td>
<td>Head, inter-scapular region and fore limbs</td>
<td>Extensive lesions (2-3.5 cm) in cluster, n=32</td>
</tr>
<tr>
<td>STP-80</td>
<td>Feb’11</td>
<td>Basanti Pandit Madhya Gurguria, Kultali, 24 PGN (S)</td>
<td>Bovine:5, CBJ Cow-1, CBJ HF-2, ND Cow-2</td>
<td>CBJ HF-1, 2.5 Years</td>
<td>Around eyes, ear tips and neck</td>
<td>Rounded and roughly elongated finger like solid horny outgrowths (3-7 cm), n=28</td>
</tr>
<tr>
<td>STP-81</td>
<td>March’11</td>
<td>Manotosh Sahoo Madhya Gurguria, Kultali, 24 PGN (S)</td>
<td>Bovine:5, ND Cow-3, Gir HF-2</td>
<td>Gir Heifer-1, 2.5 Years</td>
<td>Neck, abdomen and hind limbs</td>
<td>Circular, rough, dry, horny, sessile warts (2-3.5 cm), n=8</td>
</tr>
<tr>
<td>STP-82</td>
<td>March’11</td>
<td>Nimai Das Gopal Ganj, 24 PGN (S)</td>
<td>Bovine:5, ND Cow-3, ND FC-2</td>
<td>ND FC-1, 10 Months</td>
<td>Around eyes, ear tips and neck</td>
<td>Circular, rough, dry, horny, sessile warts (3-3.5 cm), n=24</td>
</tr>
<tr>
<td>STP-83</td>
<td>March’11</td>
<td>Nita Mandal Purba Gurguria, Kultali, 24 PGN (S)</td>
<td>Bovine:5, ND Cow-2, ND Bull-1, ND FC-2</td>
<td>ND Bull-1, 4 Years</td>
<td>Head, inter-scapular region and fore limbs</td>
<td>Rounded and roughly elongated finger like solid horny outgrowths (3-7 cm), n=38</td>
</tr>
<tr>
<td>STP</td>
<td>Month</td>
<td>Name</td>
<td>Age</td>
<td>Breed</td>
<td>Lesion Location</td>
<td>Description</td>
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<tr>
<td>STP-84</td>
<td>Mar'11</td>
<td>Mamoni Sardar</td>
<td>24 PGN (S)</td>
<td>Bovine:5 ND Cow-3, GirHF-2</td>
<td>Gir HF-1, 3.5 Years</td>
<td>Solely on head Small nodular lesions(1-1.5cm), n=4</td>
</tr>
<tr>
<td>STP-85</td>
<td>Mar'11</td>
<td>Ruhydas Das</td>
<td>24 PGN (S)</td>
<td>Bovine:6 ND Cow-3, ND Bull-1, ND HF-2</td>
<td>CBJ Young Bull-1, 3 Years</td>
<td>Head, inter-scapular region and fore limbs Circular, rough, dry, horny, sessile warts (2-3.5cm), n=24</td>
</tr>
<tr>
<td>STP-86</td>
<td>Mar'11</td>
<td>Hare Krishna Das</td>
<td>24 PGN (S)</td>
<td>Bovine:4 ND Cow-3, CBJ MC-1</td>
<td>CBJ MC-1, 10 Months</td>
<td>Solely on head Small nodular lesions(1-1.5cm), n=4</td>
</tr>
<tr>
<td>STP-87</td>
<td>Mar'11</td>
<td>Uttam Naskar</td>
<td>24 PGN (S)</td>
<td>Bovine:5 CBJ Cow-3, CBJ HF-1, CBJ Bull-1</td>
<td>CBJ Young Bull-1, 3 Years</td>
<td>Head, neck and belly Circular, rough, dry, horny, sessile warts (2-3.5cm), n=24</td>
</tr>
<tr>
<td>STP-88</td>
<td>Mar'11</td>
<td>Balaram Mandal</td>
<td>24 PGN (S)</td>
<td>Bovine:4 ND Cow-2, ND FC-2</td>
<td>ND HF-1, 2.5 Years</td>
<td>Around eyes, ear tips and neck Multiple rounded, active solid outgrowths (3-4cm), n=23</td>
</tr>
<tr>
<td>STP-89</td>
<td>Mar'11</td>
<td>Bikramaditya Mistry</td>
<td>24 PGN (S)</td>
<td>Bovine:4 ND Cow-2, ND FC-2</td>
<td>Indigenous HF-1, 1.5 Years</td>
<td>Around eyes, ear tips and thorax Extensive active solid outgrowths with rough horny surface (3-5cm), n=26</td>
</tr>
<tr>
<td>STP-90</td>
<td>Mar'11</td>
<td>Kamal Majumder</td>
<td>17- FC-1</td>
<td>Bovine:5 ND Cow-2, CBJ HF-2, CBJ MC-1</td>
<td>CBJ MC-1, 11 Months</td>
<td>Head, neck and fore limbs Numerous round to spheroid, exophytic horny solid warts (3-6cm), n=42</td>
</tr>
<tr>
<td>STP-91</td>
<td>Mar'11</td>
<td>Nasir Mallick B. Chandipur, Budge Budge</td>
<td>24 PGN (S)</td>
<td>Bovine:6 ND Cow-4, CBJ FC-2</td>
<td>CBJ FC-1, 10 Months</td>
<td>Head, neck and belly Multiple pedunculated warts (4-5cm), n=18</td>
</tr>
<tr>
<td>STP-92</td>
<td>Mar'11</td>
<td>Dipankar Sardar</td>
<td>24 PGN (S)</td>
<td>Bovine:5 ND Cow-2, CBJ HF-2, CBJ MC-1</td>
<td>CBJ MC-1, 10 Months</td>
<td>Head, inter-scapular region and fore limbs Extensive active solid outgrowths with rough horny surface(3-5cm), n=25</td>
</tr>
<tr>
<td>STP-93</td>
<td>Aug'11</td>
<td>Jogen Sardar</td>
<td>24 PGN (S)</td>
<td>Bovine:4 ND Cow-3, CBJ FC-1</td>
<td>CBJ FC-1, 10 Months</td>
<td>Solely on head Small nodular lesions(1-1.5cm), n=2</td>
</tr>
<tr>
<td>STP-94</td>
<td>Aug'11</td>
<td>Madhusudan Sardar</td>
<td>24 PGN (S)</td>
<td>Bovine:5 ND Cow-2, ND Bull-1, ND FC-2</td>
<td>ND Bull-1, 4 Years</td>
<td>Solely on head Medium size single, nodular lesion(2.5cm), n=3</td>
</tr>
<tr>
<td>STP-95</td>
<td>Aug'11</td>
<td>Sulekha Maherh</td>
<td>24 PGN (S)</td>
<td>Bovine:5 CBJ FC-1, 10</td>
<td>CBJ FC-1, 10</td>
<td>Solely on head Small nodular lesions(1-1.5cm), n=5</td>
</tr>
<tr>
<td>STP-96 Aug'11</td>
<td>Madhusudan Chak, Raidighi, 24 PGN (S)</td>
<td>ND Cow-3, CBJ FC-2</td>
<td>Months</td>
<td>Solely on head</td>
<td>Small nodular lesions(1-1.5cm),n=4</td>
<td>3 Months</td>
</tr>
<tr>
<td>STP-97 Aug'11</td>
<td>Mahesh Jana Madhusudan Chak, Raidighi, 24 PGN (S)</td>
<td>Bovine:6 ND Cow-4, CBJ HF-1, CBJ MC-1</td>
<td>CBJ MC-1, 8 Months</td>
<td>Small nodular lesions (1-1.5cm),n=7</td>
<td>5 Months</td>
<td>+, Mild</td>
</tr>
<tr>
<td>STP-98 Aug'11</td>
<td>Kamala Das PurbaGurguria, Kultali, 24 PGN (S)</td>
<td>ND Bull-1, 4 Years</td>
<td>Solely on neck</td>
<td>Small nodular lesions (3-5cm),n=20</td>
<td>5 Months</td>
<td>+++</td>
</tr>
<tr>
<td>STP-99 Dec'11</td>
<td>Narendra Nath Purokait Purba Sridharpur, Raidighi, 24 PGN (S)</td>
<td>Bovine:5 ND Cow-3, CBJ FC-2</td>
<td>CBJ FC-1, 10 Months</td>
<td>Neck and shoulder</td>
<td>Circular and club shaped, solid exophytic lesions (3-5cm), n=20</td>
<td>5 Months</td>
</tr>
<tr>
<td>STP-100 Dec'11</td>
<td>Himangshu Sekhar Halder Purba Sridharpur, Raidighi, 24 PGN (S)</td>
<td>Bovine:5 ND Cow-3, CBJ FC-2</td>
<td>CBJ FC-1, 10 Months</td>
<td>Neck, chest and belly</td>
<td>Multiple(n=32) globoid tumours with tough consistency of several mm size(3-4cm)</td>
<td>5 Months</td>
</tr>
<tr>
<td>STP-101 Dec'11</td>
<td>Dhiren Sardar Purba Sridharpur, Raidighi, 24 PGN (S)</td>
<td>Bovine:6, CBJ Cow-3, CBJ MC-1, ND BK-2</td>
<td>CBJ MC-1, 11 Months</td>
<td>Neck region and fore limbs</td>
<td>Multiple(n=32) globoid tumours with tough consistency of several mm size(3-4cm)</td>
<td>4 Months</td>
</tr>
<tr>
<td>STP-102 Dec'11</td>
<td>Divakar Halder Purba Sridharpur, Raidighi, 24 PGN (S)</td>
<td>Bovine:6, CBJ Cow-3, CBJ HF-1, ND BK-2</td>
<td>CBJ FC-1, 10 Months</td>
<td>Head, neck and belly</td>
<td>Multiple(n=23) globoid tumours with tough consistency of several mm size(3-4cm)</td>
<td>5 Months</td>
</tr>
<tr>
<td>STP-103 Dec'11</td>
<td>Sasanka Sekhar Haldar Purba Sridharpur, Raidighi, 24 PGN (S)</td>
<td>Bovine:6, CBJ Cow-3, CBJ MC-1, ND BK-2</td>
<td>ND Bull-1, 4 Years</td>
<td>Solely on head</td>
<td>Small nodular lesions(1-1.5cm),n=7</td>
<td>3 Months</td>
</tr>
<tr>
<td>STP-104 Dec'11</td>
<td>Munna Ghugu Dosra, Bhagabanpur, Joynagar, 24 PGN (S)</td>
<td>Bovine:6, ND Cow-3, ND MC-1, ND FC-2</td>
<td>CBJ MC-1, 10 Months</td>
<td>Head, neck and belly</td>
<td>Round to spheroid, tough, horny outgrowths (3-6cm), n=24</td>
<td>5 Months</td>
</tr>
<tr>
<td>STP-105 Dec'11</td>
<td>Champa Giri Dosra, Bhagabanpur, Joynagar, 24 PGN (S)</td>
<td>Bovine:6, CBJ Cow-3, CBJ MC-1, ND BK-2</td>
<td>CBJ MC-1, 12 Months</td>
<td>Head and ear base</td>
<td>Small nodular lesions(1-1.5cm),n=7</td>
<td>4 Months</td>
</tr>
<tr>
<td>STP-106 Dec'11</td>
<td>M. K. Samanta Dosra, Bhagabanpur, Joynagar, 24 PGN (S)</td>
<td>Bovine:5, CBJ Cow-2, CBJ MC-1, ND BK-2</td>
<td>CBJ MC-1, 11 Months</td>
<td>Scattered lesions around the eyes</td>
<td>Small nodular lesions(1-1.5cm),n=7</td>
<td>4 Months</td>
</tr>
</tbody>
</table>
Table-20: Breed, age group and sex wise synopsis of cutaneous wart (CWT) and teat papilloma (TP) in cattle and buffalo in South 24 Pargana District of WB

<table>
<thead>
<tr>
<th>Breeds affected</th>
<th>Susceptible animal population in BP affected herds</th>
<th>Total No.of wart cases</th>
<th>Sex</th>
<th>Age group</th>
<th>No of CWT cases</th>
<th>No of TP cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indigenous and non-descript cattle</td>
<td>490</td>
<td>61</td>
<td>F-40</td>
<td>Calf hood</td>
<td>11</td>
<td>39</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Sub-adult</td>
<td>28</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Adult</td>
<td>01</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Old</td>
<td>-</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>M-21</td>
<td>Calf hood</td>
<td>13</td>
<td>21</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Sub-adult</td>
<td>04</td>
<td>N/A</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Adult</td>
<td>04</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Old</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Cross breed cattle (CBJ)</td>
<td>67</td>
<td>44</td>
<td>F-34</td>
<td>Calf hood</td>
<td>09</td>
<td>33</td>
</tr>
<tr>
<td></td>
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<td></td>
<td></td>
<td>Sub-adult</td>
<td>23</td>
<td>01</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Adult</td>
<td>02</td>
<td></td>
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<td></td>
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<td></td>
<td>Old</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>M-11</td>
<td>Calf hood</td>
<td>09</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Sub-adult</td>
<td>01</td>
<td></td>
</tr>
<tr>
<td></td>
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<td></td>
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<td></td>
<td>Old</td>
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</tr>
<tr>
<td>Pure breed cattle</td>
<td>-</td>
<td>-</td>
<td>F</td>
<td>Sub-adult</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>M</td>
<td>Adult</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Cross breed cattle (HLX)</td>
<td>-</td>
<td>-</td>
<td>F</td>
<td>Sub-adult</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>M</td>
<td>Adult</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Buffalo</td>
<td>-</td>
<td>-</td>
<td>F</td>
<td>Adult</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>M</td>
<td>Adult</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Grand Total</td>
<td>557</td>
<td>106</td>
<td>M-32</td>
<td>Calf hood</td>
<td>42</td>
<td>104</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Sub-adult</td>
<td>56</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Adult</td>
<td>08</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Old</td>
<td>-</td>
<td>02</td>
</tr>
</tbody>
</table>
Table-21: Field level survey on spontaneous cases of cutaneous papillomatosis (warts) in the District of Hooghly of West Bengal

<table>
<thead>
<tr>
<th>Sl No</th>
<th>Survey period</th>
<th>Owners name &amp; address</th>
<th>Herd strength</th>
<th>Category of animals affected</th>
<th>Location and type of wart</th>
<th>No and size</th>
<th>Severity and duration of infection</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>HLY-1</td>
<td>December-2009</td>
<td>Goutam Bera Rahimpur, Jangi Para, Hooghly</td>
<td>Bovine: 9 CBJ-6 ND-3</td>
<td>CBJ Cow-1, 3 Years</td>
<td>Multiple rounded and club shaped solid pedunculated warts on neck and shoulder region</td>
<td>n=20, 5-8 cm in diameter</td>
<td>++++, 6 months</td>
<td>Moderate, Thuja orally tried</td>
</tr>
<tr>
<td>HLY-2</td>
<td>December-2009</td>
<td>Tanmoy Patra Santipuram Singur, Hooghly</td>
<td>Bovine: 6 Gir-4 ND-2</td>
<td>Gir FC-1, 10 Months</td>
<td>Rounded and finger like non pedunculated warts on around the eyes and face</td>
<td>n=30, 3-4 cm in diameter</td>
<td>++++, 5 Months</td>
<td>Moderate, Homeopathic remedy</td>
</tr>
<tr>
<td>HLY-3</td>
<td>December-2009</td>
<td>Subhasis Ghosh Bhumia Para Belun, Pandua, Hooghly</td>
<td>Bovine:10 Gir-3 CBJ-7</td>
<td>Gir HF-1, 2 Years</td>
<td>Cauliflower like pedunculated warts around the vulva and anus</td>
<td>n=14, 2-3 cm in diameter</td>
<td>++++, 4 Months</td>
<td>Moderate, Levamisole oral therapy</td>
</tr>
<tr>
<td>HLY-4</td>
<td>December-2009</td>
<td>Narayan Deb Nath Baikunthapur, Tribeni, Hooghly</td>
<td>Bovine:8 ND-6 CBJ-2</td>
<td>ND BK-1, 5 Years</td>
<td>Circular to elongated, rough, horny sessile type warts on poll region and both sides of the neck</td>
<td>More than 50, 1-2 mm in diameter</td>
<td>++++, 6 Months</td>
<td>Severe, Inj. Anthiomalone tried</td>
</tr>
<tr>
<td>HLY-5</td>
<td>December-2009</td>
<td>Soumen Adhikery Jirat, Hat-tala, Hooghly</td>
<td>Bovine:9 CBJ-6 ND-3</td>
<td>CBJ HF-1, 24 Months</td>
<td>Sessile type warts on neck, chest and belly</td>
<td>n&gt;50, 3-5 cm in diameter</td>
<td>++++, 4 Months</td>
<td>Severe, Levamisole oral therapy</td>
</tr>
<tr>
<td>HLY-6</td>
<td>December-2009</td>
<td>Srimanta Koley Mandaram, Itachuna, Hooghly</td>
<td>Bovine:9 ND-6 CBJ-3</td>
<td>CBJ Cow-1, 3 Years</td>
<td>Extensive cauliflower like pedunculated warts on fore limbs, back and barrel</td>
<td>n=20, 5-8 cm in diameter</td>
<td>++++, 4 Months</td>
<td>Moderate, Homeopathic remedy</td>
</tr>
<tr>
<td>HLY-7</td>
<td>December-2009</td>
<td>Raghunath Paul Bainchi, Pandua, Hooghly</td>
<td>Bovine:6 Gir-4 ND-2</td>
<td>Gir FC-1, 10 Months</td>
<td>Nodular non pedunculated warts on the skin around the mouth, eyes and neck</td>
<td>n=30, 3-4 cm in diameter</td>
<td>++++, 6 Months</td>
<td>Moderate, Levamisole oral therapy</td>
</tr>
<tr>
<td>HLY-8</td>
<td>December-2009</td>
<td>Indrajit Paul Bainchi, Pandua, Hooghly</td>
<td>Bovine:10 ND-7 CBJ-3</td>
<td>Gir HF-1, 2 Years</td>
<td>Small cauliflower like pedunculated warts on fore limbs, armpit and thighs</td>
<td>n=14, 2-3 cm in diameter</td>
<td>++++, 4 Months</td>
<td>Moderate, Inj. Anthiomalone tried</td>
</tr>
<tr>
<td>HLY-9</td>
<td>December-2009</td>
<td>Abbasuddin Dargai Sudarsan, Polba, Hooghly</td>
<td>Bovine:9 ND-4 Gir-5</td>
<td>ND BK-1, 5 Years</td>
<td>Squat type warts on the posterior aspect of the thigh and at base of the tail</td>
<td>More than 50, 1-2 mm in diameter</td>
<td>++++, 6 Months</td>
<td>Moderate, Levamisole oral therapy</td>
</tr>
<tr>
<td>HLY-10</td>
<td>December-2009</td>
<td>Nitai Ray Khuntighat, Mogra, Hooghly</td>
<td>Bovine:6 ND-2</td>
<td>CBJ HF-1, 24 Months</td>
<td>Non pedunculated warts around the scrotum and inner aspect of thigh</td>
<td>n=20, 5-8 cm in diameter</td>
<td>++++, 4 Months</td>
<td>Moderate, Inj. Ivermectin tried</td>
</tr>
<tr>
<td>HLY-11</td>
<td>December-2009</td>
<td>Sudha Hansda Khannyan, Pandua, Hooghly</td>
<td>CBJ-4</td>
<td>Bovine:10 ND-5 Gir-5</td>
<td>Gir FC-1, 10 Months</td>
<td>Stalked warts at the base of the ears and around eyes</td>
<td>n=30, 3-4 cm in diameter</td>
<td>++++, 3 Months</td>
</tr>
<tr>
<td>HLY-12</td>
<td>December-2009</td>
<td>Bimal Hore Mahammadpur</td>
<td>CBJ HF-1, 24 Months</td>
<td>ND-4 CBJ-5</td>
<td>A big size(8cm), cauliflower like pedunculated wart on poll region</td>
<td>n=1, 8 cm in diameter</td>
<td>+, Mild</td>
<td>Surgical excision done</td>
</tr>
<tr>
<td>HLY-13</td>
<td>December-2009</td>
<td>Kartik Mondal Aschitpur, khamargachi, Hooghly</td>
<td>Gir FC-1, 10 Months</td>
<td>ND-4 CBJ-2</td>
<td>Warts(pedunculated) on face and ear pinna</td>
<td>n=20, 5-8 cm in diameter</td>
<td>++++, 4 Months</td>
<td>Moderate Levamisole oral therapy tried</td>
</tr>
<tr>
<td>HLY-14</td>
<td>December-2009</td>
<td>Nazrul Islam Aschitpur, khamargachi, Hooghly</td>
<td>Gir FC-1, 10 Months</td>
<td>ND-5 Gir-5</td>
<td>Multiple cutaneous out pedunculated growths on the hind limbs and sacral region(pedunculated warts)</td>
<td>n=30, 3-4 cm in diameter</td>
<td>++++, 6 Months</td>
<td>Moderate, Inj. Anthiomaline tried</td>
</tr>
<tr>
<td>HLY-15</td>
<td>December-2009</td>
<td>Anup Ghosh Rosna, Pandua, Hooghly</td>
<td>Gir HF-1, 2 Years</td>
<td>ND-3 Gir-5</td>
<td>Small, solitary cauliflower like pedunculated growth on neck and back</td>
<td>n=14, 2-3 cm in diameter</td>
<td>++++, 4 Months</td>
<td>Moderate, Levamisole oral therapy</td>
</tr>
<tr>
<td>HLY-16</td>
<td>December-2009</td>
<td>Bikash Ghosh Rosna, Pandua, Hooghly</td>
<td>Gir FC-1, 10 Months</td>
<td>ND-6 Gir-5</td>
<td>Irregular cauliflower like growth on the face, neck and dewlap</td>
<td>n=14, 3-4 mm in diameter</td>
<td>++++, 6 Months</td>
<td>Moderate, Inj. Ivermectin tried</td>
</tr>
<tr>
<td>HLY-17</td>
<td>December-2009</td>
<td>Jagatpati Mondal Rosna, Pandua, Hooghly</td>
<td>Gir FC-1, 10 Months</td>
<td>CBJ-2 ND-8</td>
<td>Solitary, blackish, dome shaped non pedunculated growth on the ear pinna, neck and fore limbs</td>
<td>n=20, 5-8 cm in diameter</td>
<td>++++, 4 Months</td>
<td>Moderate Homeopathic remedy</td>
</tr>
<tr>
<td>HLY-18</td>
<td>December-2009</td>
<td>Manas Pal Rosna, Pandua, Hooghly</td>
<td>Gir FC-1, 10 Months</td>
<td>CBJ-3 ND-3</td>
<td>Cauliflower like pedunculated warts on hind limbs and perineum</td>
<td>n=20, 3-4 cm in diameter</td>
<td>++++, 3 Months</td>
<td>Moderate, Inj. Ivermectin tried</td>
</tr>
<tr>
<td>HLY-19</td>
<td>December-2009</td>
<td>Gujan Bhumij Khannyan, Pandua, Hooghly</td>
<td>Gir HF-1, 2 Years</td>
<td>ND-7 Gir-3</td>
<td>Cauliflower like pedunculated warts on head, neck and belly</td>
<td>n=14, 2-3 cm in diameter</td>
<td>++++, 4 Months</td>
<td>Moderate, Inj. Anthiomaline tried</td>
</tr>
<tr>
<td>HLY-20</td>
<td>December-2009</td>
<td>Md. Giyasuddin Khannyan, Pandua, Hooghly</td>
<td>Gir FC-1, 10 Months</td>
<td>ND-6 CBJ-2</td>
<td>Small slender stalked warty growths on the lower back and belly</td>
<td>n=16, 1-2 cm in diameter</td>
<td>++++, 6 Months</td>
<td>Moderate, Levamisole oral therapy</td>
</tr>
<tr>
<td>HLY-21</td>
<td>January-2010</td>
<td>Sk. Atikur Rahaman Noximaholla, Pandua, Hooghly</td>
<td>Gir HF-1, 24 Months</td>
<td>CBJ-4 ND-2</td>
<td>Multiple rounded and club shaped non pedunculated solid warts on neck and shoulder region</td>
<td>n=20, 5-8 cm in diameter</td>
<td>++++, 4 Months</td>
<td>Moderate, Inj. Ivermectin tried</td>
</tr>
<tr>
<td>HLY-22</td>
<td>January-2010</td>
<td>Dipankar Raj</td>
<td>Gir FC-1, 10 Months</td>
<td>Gir-4 ND-2</td>
<td>Rounded and finger like pedunculated</td>
<td>n=30, 3-4 cm in</td>
<td>++++, 2 Months</td>
<td>Moderate</td>
</tr>
<tr>
<td>Case No.</td>
<td>Date</td>
<td>Bovine Information</td>
<td>Lesion Details</td>
<td>Number of Warts</td>
<td>Diameter</td>
<td>Treatment</td>
<td></td>
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<tr>
<td>HLY-23</td>
<td>Jan 2010</td>
<td>Santosh Sen, Keota Pal Bagan, Sahaganj, Chinsurah Hooghly</td>
<td>Warts on around the eyes and face</td>
<td>14</td>
<td>2-3 cm</td>
<td>Homeopathic remedy</td>
<td></td>
<td></td>
</tr>
<tr>
<td>HLY-24</td>
<td>Jan 2010</td>
<td>Anubhav Ghosh Sahaganj, Keota Ghoshpara, Chinsurah Hooghly</td>
<td>Circular to elongated, rough, horny sessile type warts on poll region and both sides of the neck</td>
<td>17</td>
<td>3-4 cm</td>
<td>Levamisole oral therapy</td>
<td></td>
<td></td>
</tr>
<tr>
<td>HLY-25</td>
<td>Jan 2010</td>
<td>Buddhadeb Porey, Adisaptagram, Hooghly</td>
<td>Sessile type warts on neck, chest and belly, projecting like towel surface</td>
<td>15</td>
<td>3-5 cm</td>
<td>Moderate, Inj. Anthiomaline tried</td>
<td></td>
<td></td>
</tr>
<tr>
<td>HLY-26</td>
<td>Jan 2010</td>
<td>Nima Ghosh Adisaptagram, Hooghly</td>
<td>Stalked warts on neck and shoulder</td>
<td>20</td>
<td>5-8 cm</td>
<td>Moderate, Levamisole oral therapy</td>
<td></td>
<td></td>
</tr>
<tr>
<td>HLY-27</td>
<td>Jan 2010</td>
<td>Bhabani Sankar Baskey, Chaudhuri, Mogra, Hooghly</td>
<td>Rounded and finger like pedunculated warts on around the eyes and face</td>
<td>30</td>
<td>3-4 cm</td>
<td>Moderate, Inj. Ivermectin tried</td>
<td></td>
<td></td>
</tr>
<tr>
<td>HLY-28</td>
<td>Jan 2010</td>
<td>Santosh Halder, Tanba, Haridaspur, Pandua, Hooghly</td>
<td>Multiple rounded and club-shaped solid non pedunculated warts on neck and shoulder region</td>
<td>14</td>
<td>2-3 cm</td>
<td>Moderate, Homeopathic remedy</td>
<td></td>
<td></td>
</tr>
<tr>
<td>HLY-29</td>
<td>Jan 2010</td>
<td>Sujit Deb Nath, Sija, Khamargachi, Blaghat, Hooghly</td>
<td>Rounded and finger like pedunculated warts on around the eyes and face</td>
<td>20</td>
<td>5-8 cm</td>
<td>Moderate, Levamisole oral therapy</td>
<td></td>
<td></td>
</tr>
<tr>
<td>HLY-30</td>
<td>Jan 2010</td>
<td>Sukdev Das Hamjanpur, Khamargachi, Blaghat, Hooghly</td>
<td>Cauliflower like pedunculated warts around the vulva and anus</td>
<td>30</td>
<td>3-4 cm</td>
<td>Moderate, Inj. Anthiomaline tried</td>
<td></td>
<td></td>
</tr>
<tr>
<td>HLY-31</td>
<td>Jan 2010</td>
<td>Sudip Das Mohanad, Polba, Hooghly</td>
<td>Sessile type warts on neck, chest and belly, projecting like towel surface</td>
<td>20</td>
<td>5-8 cm</td>
<td>Moderate, Left untreated</td>
<td></td>
<td></td>
</tr>
<tr>
<td>HLY-32</td>
<td>Jan 2010</td>
<td>Provas Moni Verikuti, Mogra, Hooghly</td>
<td>Multiple club-shaped pedunculated warts on head, neck and shoulder region</td>
<td>30</td>
<td>3-4 cm</td>
<td>Moderate, Homeopathic remedy</td>
<td></td>
<td></td>
</tr>
<tr>
<td>HLY-33</td>
<td>Jan 2010</td>
<td>Uttam Ghosh Verikuti, Mogra, Hooghly</td>
<td>Multiple rounded and club shaped solid non pedunculated warts on neck and shoulder region</td>
<td>14</td>
<td>2-3 cm</td>
<td>Moderate, Homeopathic remedy</td>
<td></td>
<td></td>
</tr>
<tr>
<td>HLY-34</td>
<td>Jan 2010</td>
<td>Sanatan Pakhira Verikuti,</td>
<td>Rounded and finger like non pedunculated</td>
<td>20</td>
<td>5-8 cm</td>
<td>Moderate</td>
<td></td>
<td></td>
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<tr>
<td>Case</td>
<td>Date</td>
<td>Origin</td>
<td>Age</td>
<td>Breed</td>
<td>Treatment</td>
<td>Description</td>
<td>Diameter</td>
<td>Treatment Details</td>
</tr>
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<tr>
<td>HLY-35</td>
<td>January-2010</td>
<td>Mogra, Hooghly</td>
<td>2.5 years</td>
<td>Bovine:8</td>
<td>Levamisole oral therapy</td>
<td>Round, 3-4 cm in diameter</td>
<td>+++, 4 Months</td>
<td>Moderate, Inj. Anthiomaline tried</td>
</tr>
<tr>
<td>HLY-36</td>
<td>January-2010</td>
<td>Akshoy Nag</td>
<td>Gir HF-1; 2 years</td>
<td>Bovine:10</td>
<td>Levamisole oral therapy</td>
<td>Circular to elongated, rough, horny sessile type warts on poll region and both sides of the neck</td>
<td>+++, 6 Months</td>
<td>Moderate, Levamisole oral therapy</td>
</tr>
<tr>
<td>HLY-37</td>
<td>January-2010</td>
<td>Manoj Baul Das</td>
<td>Gir HF-1; 2 years</td>
<td>Bovine:8</td>
<td>Levamisole oral therapy</td>
<td>Pedunculated warts on face and ear pinna</td>
<td>+++, 4 Months</td>
<td>Moderate, Left untreated</td>
</tr>
<tr>
<td>HLY-38</td>
<td>January-2010</td>
<td>Kallol Mitra</td>
<td>Gir HF-1; 2.5 years</td>
<td>Bovine:6</td>
<td>Levamisole oral therapy</td>
<td>Two cauliflower like pedunculated growths on the sacral region and multiple growths on perinium</td>
<td>+++, 6 Months</td>
<td>Moderate Homeopathic remedy</td>
</tr>
<tr>
<td>HLY-39</td>
<td>January-2010</td>
<td>Ranjan Pandit Dabra</td>
<td>Gir HF-1; 2.5 years</td>
<td>Bovine:10</td>
<td>Levamisole oral therapy</td>
<td>Cauliflower like pedunculated growth on neck and back</td>
<td>+++, 4 Months</td>
<td>Moderate Homeopathic remedy</td>
</tr>
<tr>
<td>HLY-40</td>
<td>January-2010</td>
<td>Krishna Ch Dhak</td>
<td>Gir-1; 8 Months</td>
<td>Bovine:8</td>
<td>Levamisole oral therapy</td>
<td>Extensive irregular cauliflower like pedunculated growth on the face, neck and dewlap</td>
<td>+++, 2 Months</td>
<td>Moderate Levamisole oral therapy</td>
</tr>
<tr>
<td>HLY-41</td>
<td>January-2010</td>
<td>Bijoy Roychoudhury</td>
<td>Gir HF-1; 2 years</td>
<td>Bovine:10</td>
<td>Ivermectin tried</td>
<td>Solitary, blackish, dome shaped non-pedunculated growth on the ear pinna, neck and fore limbs</td>
<td>+++, 6 Months</td>
<td>Moderate Levamisole oral therapy</td>
</tr>
<tr>
<td>HLY-42</td>
<td>January-2010</td>
<td>Raju Ghosh</td>
<td>Gir HF-1; 2 years</td>
<td>Bovine:8</td>
<td>Levamisole oral therapy</td>
<td>Warts (pedunculated solid out growths) on face and ear pinna</td>
<td>+++, 4 Months</td>
<td>Moderate Levamisole oral therapy</td>
</tr>
<tr>
<td>HLY-43</td>
<td>January-2010</td>
<td>Santosh Bhagat</td>
<td>Gir HF-1; 2 years</td>
<td>Bovine:6</td>
<td>Ivermectin tried</td>
<td>Multiple club shaped solid pedunculated out growths on the sacral and peri anal region</td>
<td>+++, 6 Months</td>
<td>Moderate Levamisole oral therapy</td>
</tr>
<tr>
<td>HLY-44</td>
<td>January-2010</td>
<td>Sujit Kirtania</td>
<td>Gir HF-1; 2 years</td>
<td>Bovine:10</td>
<td>Ivermectin tried</td>
<td>Small cauliflower like pedunculated growth on eye lids, neck and back</td>
<td>+++, 4 Months</td>
<td>Moderate Homeopathic remedy</td>
</tr>
<tr>
<td>HLY-45</td>
<td>January-2010</td>
<td>Avijit Goswami</td>
<td>Gir HF-1; 1.5 years</td>
<td>Bovine:8</td>
<td>Levamisole oral therapy</td>
<td>Warts (pedunculated) on face and ear pinna (pedunculated warts)</td>
<td>+++, 4 Months</td>
<td>Moderate Levamisole oral therapy</td>
</tr>
<tr>
<td>HLY-46</td>
<td>January-2010</td>
<td>Sudhir Kirtania</td>
<td>Gir HF-1; 2 years</td>
<td>Bovine:10</td>
<td>Levamisole oral therapy</td>
<td>Two solid pedunculated out growths on</td>
<td>+++, 6 Months</td>
<td>Moderate</td>
</tr>
<tr>
<td>Reference</td>
<td>Date</td>
<td>Location</td>
<td>Breed</td>
<td>Affected Organ</td>
<td>Description</td>
<td>Size</td>
<td>Duration</td>
<td>Treatment</td>
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<tr>
<td>HLY-47</td>
<td>Feb-2010</td>
<td>Balagarh</td>
<td>ND Cow-6, ND FC-3, ND HF-1</td>
<td>the sacral region</td>
<td>Smaller cauliflower like pedunculated growth on neck and back</td>
<td>2-3 cm</td>
<td>14, 4-8 months</td>
<td>Moderate, Inj. Ivermectin tried</td>
</tr>
<tr>
<td>HLY-48</td>
<td>Feb-2010</td>
<td>Abdul Baser Mallik, Hadiapota, Mogra</td>
<td>Bovine: 6 ND Cow-4, ND HF-2</td>
<td>ND BF-1; 2 years</td>
<td>Extensive irregular cauliflower like pedunculated growth on the face, neck and fore limbs</td>
<td>5-8 cm</td>
<td>20-24 months</td>
<td>Moderate, Inj. Anthiomaline tried</td>
</tr>
<tr>
<td>HLY-49</td>
<td>Feb-2010</td>
<td>Santosh K Gupta, Joypur, Mogra, Hooghly</td>
<td>Bovine: 6 ND Cow-4, ND HF-2</td>
<td>ND BF-1; 8 Months</td>
<td>Solitary, blackish, dome shaped non pedunculated growth on the ear base, neck and fore limbs</td>
<td>3-4 cm</td>
<td>30-36 months</td>
<td>Moderate, Levamisole oral therapy</td>
</tr>
<tr>
<td>HLY-50</td>
<td>Feb-2010</td>
<td>Gour Chakraborty, Joypur, Mogra, Hooghly</td>
<td>Bovine: 6 ND Cow-4, ND HF-2</td>
<td>ND BF-1; 2 years</td>
<td>Multiple solid non pedunculated warts on face and ear pinna</td>
<td>2-3 cm</td>
<td>14-18 months</td>
<td>Moderate, Left untreated</td>
</tr>
<tr>
<td>HLY-51</td>
<td>Feb-2010</td>
<td>Swaran Kr Patra, Chinsurah, Mogra, Hooghly</td>
<td>Bovine: 6 ND Cow-4, ND HF-2</td>
<td>ND BF-1; 2.5 years</td>
<td>Multiple solid non pedunculated warts on face and ear pinna</td>
<td>2-3 cm</td>
<td>14-18 months</td>
<td>Moderate, Homeopathic remedy</td>
</tr>
<tr>
<td>HLY-52</td>
<td>Feb-2010</td>
<td>Sumit Das Chinsurah, Mogra, Hooghly</td>
<td>Bovine: 6 ND Cow-4, ND HF-2</td>
<td>ND BF-1; 2 years</td>
<td>Two hard horny pedunculated growths on the sacral region</td>
<td>2-3 cm</td>
<td>14-18 months</td>
<td>Moderate, Homeopathic remedy</td>
</tr>
<tr>
<td>HLY-53</td>
<td>Feb-2010</td>
<td>Anil Das, Sonatali, Chawkbazar, Mogra</td>
<td>Bovine: 7 ND Cow-4, ND HF-2, ND FC-1</td>
<td>ND BF-1; 2 years</td>
<td>Small cauliflower like pedunculated growth on head, neck and back</td>
<td>3-4 cm</td>
<td>30-36 months</td>
<td>Moderate, Levamisole oral therapy</td>
</tr>
<tr>
<td>HLY-54</td>
<td>Feb-2010</td>
<td>Kisore Karmakar, Chinsurah, Mogra, Hooghly</td>
<td>Bovine: 8 ND Cow-4, ND HF-2, ND FC-1</td>
<td>ND BF-1; 3.5 years</td>
<td>Small cauliflower like pedunculated growth on neck and back</td>
<td>2-3 cm</td>
<td>14-18 months</td>
<td>Moderate, Inj. Anthiomaline tried</td>
</tr>
<tr>
<td>HLY-55</td>
<td>Feb-2010</td>
<td>Nanda Kisore Chouhan, Chinsurah, Mogra, Hooghly</td>
<td>Bovine: 5 ND Cow-3, ND HF-2, ND MC-1</td>
<td>ND BF-1; 2 years</td>
<td>Extensive irregular cauliflower like pedunculated non pedunculated growth on the sacral region</td>
<td>2-3 cm</td>
<td>14-18 months</td>
<td>Moderate, Inj. Ivermectin tried</td>
</tr>
<tr>
<td>HLY-56</td>
<td>Feb-2010</td>
<td>Joy Govinda Pal, Palaspar, Tribeni, Mogra, Hooghly</td>
<td>Bovine: 8 ND Cow-3, ND HF-2, ND MC-1</td>
<td>ND BF-1, 1.5 years</td>
<td>Solitary, blackish, dome shaped growth on the ear pinna, neck and fore limbs</td>
<td>5-7 cm</td>
<td>20-24 months</td>
<td>Moderate, Inj. Ivermectin tried</td>
</tr>
<tr>
<td>HLY-57</td>
<td>Feb-2010</td>
<td>Asoke Karmakar, Uttar Gorasthan, Chinsurah, Mogra</td>
<td>Bovine: 5 ND Cow-3, ND HF-1, ND FC-1</td>
<td>ND BF-1; 2 years</td>
<td>Cauliflower like pedunculated warts on hind limbs and perineum</td>
<td>3-4 cm</td>
<td>30-36 months</td>
<td>Moderate, Homeopathic remedy</td>
</tr>
<tr>
<td>HLY-58</td>
<td>Feb-2010</td>
<td>Amit Pal</td>
<td>Bovine: 5 ND MC-1, 12 Months</td>
<td>Cauliflower like pedunculated warts on neck and back</td>
<td>2-3 cm</td>
<td>14-18 months</td>
<td>Moderate</td>
<td>HLY-58</td>
</tr>
<tr>
<td>Animal ID</td>
<td>Date</td>
<td>Location</td>
<td>Breed</td>
<td>Strain</td>
<td>Age</td>
<td>Lesion Description</td>
<td>Size</td>
<td>Treatment</td>
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<tr>
<td>HLY-59</td>
<td>March-2010</td>
<td>Nalikul, Hooghly</td>
<td>ND Cow-3, ND HF-1, ND MC-1</td>
<td>Small slender non pedunculated growth on the lower thoracic region, back and belly</td>
<td>More than 50, 1-2 mm in diameter</td>
<td>+++, 6 Months</td>
<td>Homeopathic remedy</td>
<td></td>
</tr>
<tr>
<td>HLY-60</td>
<td>March-2010</td>
<td>Debnath Das Oliapur, Nainagrah, Hooghly</td>
<td>Bovine:9 ND Cow-5, CBJ HF-3, CBJ Cow-1</td>
<td>Rice grain type warts on all four teats</td>
<td>n=20, 2-3 cm in diameter</td>
<td>+++, 4 Months</td>
<td>Moderate, Injectable Levamisole therapy tried</td>
<td></td>
</tr>
<tr>
<td>HLY-61</td>
<td>March-2010</td>
<td>Tanmoy Dey Kanaipur Colony, Kanaipur, Hooghly</td>
<td>Bovine:6 ND Cow-3, Gir HF-1, Gir FC-2</td>
<td>Multiple, irregular cauliflower like pedunculated growth on the face, neck and dewlap</td>
<td>n=20, 5-8 cm in diameter</td>
<td>+++, 3 Months</td>
<td>Moderate, Injectable Levamisole therapy tried</td>
<td></td>
</tr>
<tr>
<td>HLY-62</td>
<td>March-2010</td>
<td>Sarada Murmu Bahaired, Nayasarai, Balagarh, Hooghly</td>
<td>Bovine:6 ND Cow-3, Gir HF-1, Gir MC-2</td>
<td>Small cauliflower like pedunculated growth on neck and back</td>
<td>n=30, 3-4 cm in diameter</td>
<td>+++, 4 Months</td>
<td>Moderate, Homeopathic remedy</td>
<td></td>
</tr>
<tr>
<td>HLY-63</td>
<td>March-2010</td>
<td>Bidur Sarkar Nityanandapur, Nayasarai, Balagarh</td>
<td>Bovine:7 ND Cow-4, Sahiwal HF-2, CBJ Cow-1</td>
<td>Extensive irregular cauliflower like pedunculated growth on the face, neck and dewlap</td>
<td>n=14, 2-3 cm in diameter</td>
<td>+++, 6 Months</td>
<td>Moderate, Injectable Levamisole therapy</td>
<td></td>
</tr>
<tr>
<td>HLY-64</td>
<td>March-2010</td>
<td>Trinath Das Shaspur, Balagarh, Hooghly</td>
<td>Bovine:7 CBJ Cow-5, CBJ HF-2</td>
<td>Solitary, blackish, dome shaped non pedunculated growth on the ear pinna, around the eyes, neck and fore limbs</td>
<td>n=20, 3-4 cm in diameter</td>
<td>+++, 4 Months</td>
<td>Moderate, Injectable Levamisole therapy tried</td>
<td></td>
</tr>
<tr>
<td>HLY-65</td>
<td>March-2010</td>
<td>Sachindra Nath Biswas Gopal Pur, Balagarh, Hooghly</td>
<td>Bovine:8 ND Cow-4, CBJ FC-3, CBJ HF-1</td>
<td>Cauliflower like pedunculated warts on hind limbs and perineum</td>
<td>n=20, 5-8 cm in diameter</td>
<td>+++, 6 Months</td>
<td>Moderate, Injectable Levamisole therapy</td>
<td></td>
</tr>
<tr>
<td>HLY-66</td>
<td>March-2010</td>
<td>Upendra Ch Barai Milongarh, Balagarh, Hooghly</td>
<td>Bovine:6 ND Cow-3, CBJ HF-2, CBJ Cow-1</td>
<td>Diffuse fround type warts on all four teats</td>
<td>n=12, 5-8 cm in diameter</td>
<td>+++, 4 Months</td>
<td>Moderate, Left untreated</td>
<td></td>
</tr>
<tr>
<td>HLY-67</td>
<td>March-2010</td>
<td>Samir Kr Mondal Shyampur, Singur, Hooghly</td>
<td>Bovine:10 ND Cow-5, Gir HF-3, Gir FC-2</td>
<td>Small slender non pedunculated growths on the lower back and belly</td>
<td>n=20, 5-8 cm in diameter</td>
<td>+++, 6 Months</td>
<td>Moderate Homeopathic remedy</td>
<td></td>
</tr>
<tr>
<td>HLY-68</td>
<td>March-2010</td>
<td>Nityananda Adak Shyampur, Singur, Hooghly</td>
<td>Bovine:8 ND Cow-4, Gir HF-3, Gir MC-1</td>
<td>Small cauliflower like pedunculated growth on head, neck and back</td>
<td>n=30, 3-4 cm in diameter</td>
<td>+++, 4 Months</td>
<td>Moderate, Injectable Levamisole therapy tried</td>
<td></td>
</tr>
<tr>
<td>HLY-69</td>
<td>March-2010</td>
<td>Sujit Bag Daulotpur, Singur, Hooghly</td>
<td>Bovine:8 ND Cow-5, Graded Sahiwal HF-1, 3 Years</td>
<td>Small cauliflower like pedunculated growth on neck and back</td>
<td>n=14, 2-3 cm in diameter</td>
<td>+++, 6 Months</td>
<td>Moderate,</td>
<td></td>
</tr>
<tr>
<td>HLY-70</td>
<td>March-2010</td>
<td>Sukdev Bag Daulotpur, Singur, Hooghly</td>
<td>Bovine: 8 ND Cow-6, CBJ HF-2</td>
<td>CBJ HF-1, 24 Months</td>
<td>Extensive irregular cauliflower like pedunculated growth on the face, neck and dewlap</td>
<td>More than 50, 1-2 mm in diameter</td>
<td>++++, 4 Months</td>
<td>Severe Homeopathic remedy</td>
</tr>
<tr>
<td>HLY-71</td>
<td>March-2010</td>
<td>Amal Dey, Nanda, Singur, Hooghly</td>
<td>Bovine: 6 ND Cow-3, CBJ Cow-1, CBJ FC-2</td>
<td>CBJ Cow-1, 3 Years</td>
<td>Solitary, blackish, dome shaped non pedunculated growth on the ear pinna, neck and fore limbs</td>
<td>n=20, 5-8 cm in diameter</td>
<td>++++, 6 Months</td>
<td>Moderate Injectable Levamisole therapy</td>
</tr>
<tr>
<td>HLY-72</td>
<td>March-2010</td>
<td>Sk Samsuddin Antisara, Singur, Hooghly</td>
<td>Bovine: 6 ND Cow-3, CBJ Cow-1, CBJ HF-2</td>
<td>CBJ HF-1, 24 Months</td>
<td>Cauliflower like warts pedunculated on hind limbs and perineum</td>
<td>n=20, 5-8 cm in diameter</td>
<td>++++, 4 Months</td>
<td>Moderate, Inj. Anthiomaline tried</td>
</tr>
<tr>
<td>HLY-73</td>
<td>March-2010</td>
<td>Pradip Aut Govindapur, Diarha, Singur Block, Hooghly</td>
<td>Bovine: 6 ND Cow-3, CBJ Cow-1, CBJ FC-2</td>
<td>CBJ Cow-1, 4 Years</td>
<td>Small filiform warts on teats and udder</td>
<td>n=20, 3-4 cm in diameter</td>
<td>++++, 6 Months</td>
<td>Moderate Homeopathic remedy</td>
</tr>
<tr>
<td>HLY-74</td>
<td>March-2010</td>
<td>Sudip Pal Bhawanipur, Polba Block, Hooghly</td>
<td>Bovine: 8 ND Cow-4, Gir HF-3, Gir FC-1</td>
<td>Gir FC-1, 10 Months</td>
<td>Small slender non pedunculated growth on the lower back and belly</td>
<td>n=14, 2-3 cm in diameter</td>
<td>++++, 4 Months</td>
<td>Moderate Injectable Levamisole therapy</td>
</tr>
<tr>
<td>HLY-75</td>
<td>April-2010</td>
<td>Anup Koley Chandua, Digalhati, Jangipara, Hooghly</td>
<td>Bovine: 6 ND-3, Gir HF-2, Gir MC-1</td>
<td>Gir HF-1, 2 Years</td>
<td>Small cauliflower like pedunculated growth on neck and back</td>
<td>More than 40, 5-8 mm in diameter</td>
<td>++++, 6 Months</td>
<td>Moderate, Inj. Anthiomaline tried</td>
</tr>
<tr>
<td>HLY-76</td>
<td>April-2010</td>
<td>Deb Kumar Pal Ichabati, Dawarhatita, Jangipara, Hooghly</td>
<td>Bovine: 9 ND Cow-5, Sahiwal HF-3, Sahiwal FC-1</td>
<td>Graded Sahiwal HF-1, 3 Years</td>
<td>Sessile type warts on neck, chest and belly, projecting like towel surface</td>
<td>n=20, 5-8 cm in diameter</td>
<td>++++, 4 Months</td>
<td>Moderate Injectable Levamisole therapy</td>
</tr>
<tr>
<td>HLY-77</td>
<td>April-2010</td>
<td>Bikash Konar Radhanagar, Dawarhatita, Jangipara, Hooghly</td>
<td>Bovine: 6 ND Cow-3, CBJ Cow-1, CBJ HF-2</td>
<td>CBJ HF-1, 24 Months</td>
<td>Multiple , small club shaped solid pedunculated warts on neck and shoulder region</td>
<td>n=30, 2-3 cm in diameter</td>
<td>++++, 6 Months</td>
<td>Moderate, Inj. Ivermectin tried</td>
</tr>
<tr>
<td>HLY-78</td>
<td>April-2010</td>
<td>Dipankar Nandan Barul, Dhaneakhali, Hooghly</td>
<td>Bovine: 7 ND Cow-3, CBJ Cow-1, CBJ FC-2, CBJ MC-1</td>
<td>CBJ Cow-1, 3 Years</td>
<td>Multiple rounded and club shaped pedunculated solid warts on neck and shoulder region</td>
<td>n=14, 2-3 cm in diameter</td>
<td>++++, 4 Months</td>
<td>Moderate Homeopathic remedy</td>
</tr>
<tr>
<td>HLY-79</td>
<td>April-2010</td>
<td>Bhaskar Nandan Barul, Dhaneakhali, Hooghly</td>
<td>Bovine: 6 ND Cow-3, CBJ Cow-1, CBJ HF-2</td>
<td>CBJ HF-1, 24 Months</td>
<td>Small cauliflower like pedunculated growth on neck , left lower fore limb and back</td>
<td>n=12, 1-2 mm in diameter</td>
<td>++++, 6 Months</td>
<td>Moderate Injectable Levamisole therapy</td>
</tr>
<tr>
<td>HLY-80</td>
<td>April-2010</td>
<td>Sk Monsur Ali Sirrampur, Dhaniakhali, Hooghly</td>
<td>Bovine: 7 ND Cow-3, CBJ Cow-1, CBJ FC-</td>
<td>CBJ Cow-1, 5 Years</td>
<td>Rice grain type warts on all four teats</td>
<td>n=10, 2-3 cm in diameter</td>
<td>++++, 4 Months</td>
<td>Moderate, Inj. Anthiomaline tried</td>
</tr>
<tr>
<td>HLY-81</td>
<td>April-2010</td>
<td>Sk Sarif Muhammad Fatepur, Guptipara, Hooghly</td>
<td>Bovine:8 ND Cow-4, Gir HF-2, Gir FC-2</td>
<td>Gir FC, 10 Months</td>
<td>Extensive irregular cauliflower like pedunculated growth on the face, neck and dewlap</td>
<td>n=30, 5-8 cm in diameter</td>
<td>++++, 3 Months</td>
<td>Moderate</td>
</tr>
<tr>
<td>HLY-82</td>
<td>April-2010</td>
<td>Dilip Guchhayer Haridradanga, Chandan Nagar, Hooghly</td>
<td>Bovine:8 ND Cow-4, Gir HF-2, Gir FC-2</td>
<td>Gir HF-1, 2 Years</td>
<td>Solitary, blackish, dome shaped non pedunculated growth on the ear pinna, neck and fore limbs</td>
<td>n=20, 5-8 cm in diameter</td>
<td>++++, 4 Months</td>
<td>Moderate</td>
</tr>
<tr>
<td>HLY-83</td>
<td>April-2010</td>
<td>Mihir Pal Haridradanga, Chandan Nagar, Hooghly</td>
<td>Bovine:7 ND Cow-4, RS HF-2, RS FC-1</td>
<td>Graded RS HF-1, 3 Years</td>
<td>Small cauliflower like pedunculated growths on neck and back</td>
<td>n=30, 3-4 cm in diameter</td>
<td>++++, 6 Months</td>
<td>Moderate</td>
</tr>
<tr>
<td>HLY-84</td>
<td>April-2010</td>
<td>Bholanath Saha Haridradanga, Chandan Nagar, Hooghly</td>
<td>Bovine:7 ND Cow-3, CBJ Cow-1, CBJ FC-2, CBJ HF-1</td>
<td>CBJ HF-1, 24 Months</td>
<td>Small cauliflower like growth on neck and back</td>
<td>n=14, 2-3 cm in diameter</td>
<td>++++, 4 Months</td>
<td>Moderate</td>
</tr>
<tr>
<td>HLY-85</td>
<td>April-2010</td>
<td>Ajoy Ghosh Chandan Nagar, Chinsurah Block, Hooghly</td>
<td>Bovine:7 ND Cow-3, CBJ Cow-1, CBJ FC-2, CBJ HF-1</td>
<td>CBJ Cow-1, 3 Years</td>
<td>Extensive irregular cauliflower like pedunculated growth on the face, neck and dewlap</td>
<td>More than 40, 1-2 mm in diameter</td>
<td>++++, 6 Months</td>
<td>Moderate</td>
</tr>
<tr>
<td>HLY-86</td>
<td>May-2010</td>
<td>Bholananath Banerjee Mitrabagan, Chinsurah, Hooghly</td>
<td>Bovine:6 ND Cow-2, CBJ HF-2, CBJ FC-2</td>
<td>CBJ HF-1, 24 Months</td>
<td>Solitary, blackish, dome shaped non pedunculated growth on the ear pinna, neck and fore limbs</td>
<td>n=20, 5-8 cm in diameter</td>
<td>++++, 4 Months</td>
<td>Moderate, Injectable Anthiomaline tried</td>
</tr>
<tr>
<td>HLY-87</td>
<td>May-2010</td>
<td>Sumit Das Tribeni Tissue, F/787, Chinsurah Block, Hooghly</td>
<td>Bovine:7 ND Cow-3, CBJ Cow-1, CBJ FC-2, CBJ HF-1</td>
<td>CBJ Cow-1, 3 Years</td>
<td>Small cauliflower like pedunculated growth on both sides of the neck and back</td>
<td>n=20, 5-8 cm in diameter</td>
<td>++++, 6 Months</td>
<td>Moderate, Injectable Levamisole therapy</td>
</tr>
<tr>
<td>HLY-88</td>
<td>May-2010</td>
<td>Debasis Pramanik Tribeni Tissue, C/178 Chinsurah Block, Hooghly</td>
<td>Bovine:8 ND Cow-3, Gir FC-2, Gir HF-3</td>
<td>Gir FC-1, 10 Months</td>
<td>Small cauliflower like pedunculated warts on hind limbs and at the base of the tail</td>
<td>n=30, 3-4 cm in diameter</td>
<td>++++, 4 Months</td>
<td>Moderate</td>
</tr>
</tbody>
</table>
Table-22: Breed, age group and sex wise synopsis of cutaneous wart (CWT) and teat papilloma (TP) in cattle and buffalo in Hooghly District of West Bengal

<table>
<thead>
<tr>
<th>Breeds affected</th>
<th>No. of susceptible population in the bp affected herds</th>
<th>Total No. of clinical wart cases</th>
<th>sex</th>
<th>Age group</th>
<th>No of CWT cases</th>
<th>No of TP cases</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Indigenous and non-descript cattle</td>
<td>411</td>
<td>51</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cross breed cattle (CBJ)</td>
<td>172</td>
<td>37</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pure breed cattle (PBC)</td>
<td>-</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cross breed cattle (HLX)</td>
<td>-</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Buffalo</td>
<td>-</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Grand Total</td>
<td>583</td>
<td>88</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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Table-23: Field survey and clinicopathological observations on cutaneous bovine papillomatosis in Murshidabad District of West Bengal

<table>
<thead>
<tr>
<th>Sl No</th>
<th>Period of survey</th>
<th>Owners name &amp; address</th>
<th>Species &amp; herd strength</th>
<th>Category of animals affected</th>
<th>Distribution of warts</th>
<th>Type of wart or gross appearance</th>
<th>No &amp; size</th>
<th>Duration &amp; severity of infection</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>MSD-1</td>
<td>Dec-2009</td>
<td>Harekrishna Biswas</td>
<td>Bovine: 8 ND Cow-6, CBJ Cow-1, CBJ HF-1</td>
<td>CBJ Cow-1, 4 Years</td>
<td>Eyes, mouth and lower forelegs</td>
<td>Multi centric proliferative pedunculated exophytic lesions, resembling warts</td>
<td>n=30, 3.4 cm in diameter</td>
<td>6 Months</td>
<td>Moderate</td>
</tr>
<tr>
<td>MSD-2</td>
<td>Dec-2009</td>
<td>Akshay Biswas</td>
<td>Gir HF-2, ND Cow-3 CBJ HF-2</td>
<td>Gir HF-1, 18 Months</td>
<td>Neck, thorax and abdomen</td>
<td>Pedunculated warts of varying sizes, rough, brownish, dome and button in shape</td>
<td>n=14, 2.3 cm in diameter</td>
<td>6 Months</td>
<td>Moderate, Inj. Ivermectin tried</td>
</tr>
<tr>
<td>MSD-3</td>
<td>Dec-2009</td>
<td>Samarendra Choudhury</td>
<td>CBJ HF-1, 22 Months</td>
<td>Muzzle, around the eyes and ear base and pinnae</td>
<td>Smaller skin lesions resembling non pedunculated papillomas</td>
<td>More than 50, 1-2 mm in diameter</td>
<td>5 Months</td>
<td>Severe, Thuja tried (orally)</td>
<td></td>
</tr>
<tr>
<td>MSD-4</td>
<td>Dec-2009</td>
<td>Tanmay Choudhury</td>
<td>ND HF-1, 2 Years</td>
<td>Inguinal region, left thigh and tail base</td>
<td>Cauliflower like pedunculated masses, firm and rough with horny projections</td>
<td>n=15, 3.5 cm in diameter</td>
<td>6 Months</td>
<td>Moderate, Inj. Ivermectin tried</td>
<td></td>
</tr>
<tr>
<td>MSD-5</td>
<td>Dec-2009</td>
<td>Samir Biswas</td>
<td>CBJ MC-1, 12 Months</td>
<td>Peri orbital and perianal region</td>
<td>Elevated, flat button like non pedunculated warts attached by broad base</td>
<td>n=20, 5-10 cm in diameter</td>
<td>4 Months</td>
<td>Moderate, Inj. Ivermectin tried</td>
<td></td>
</tr>
<tr>
<td>MSD-6</td>
<td>Dec-2009</td>
<td>Khader Sekh</td>
<td>ND Cow-6, ND BK-2 ND HF-1</td>
<td>ND HF-1, 2 Years</td>
<td>Nodular and irregular non pedunculated papillomatous thickening</td>
<td>n=15, 8-10 cm in diameter</td>
<td>3 Months</td>
<td>Moderate, Inj. Anthiomalone tried</td>
<td></td>
</tr>
<tr>
<td>MSD-7</td>
<td>Dec-2009</td>
<td>Taslim Seikh</td>
<td>HLX Cow-1, HLX-FC-1, ND Cow-3, ND MC-2</td>
<td>HLX FC-1, 11 Months</td>
<td>Hind limbs and perineum</td>
<td>Cauliflower like pedunculated warts on limbs, flat and round type warts on thorax and belly</td>
<td>n=15, 20-25 cm in diameter</td>
<td>6 Months</td>
<td>Moderate, Autohemotherapy tried</td>
</tr>
<tr>
<td>MSD-8</td>
<td>Dec-2009</td>
<td>Bidyapati Debnath Hariganji</td>
<td>ND BK-2, ND Cow-6, Gir-HF-2</td>
<td>Gir HF-1, 2.5 Years</td>
<td>Fore limbs, thorax and belly</td>
<td>Irregular dome shaped warts of varying sizes on neck, shoulder and brisket</td>
<td>n=15, 5-10 cm in diameter</td>
<td>8 Months</td>
<td>Moderate, Homeopathic remedy (Thuja orally) tried</td>
</tr>
<tr>
<td>MSD-9</td>
<td>Dec-2009</td>
<td>Bapyaditya Sarkar</td>
<td>ND Young BK-1, 3 Years</td>
<td>NH Cow-3, FC-2 ND BK-2</td>
<td>Several warts found to affect front two teats</td>
<td>Irregular dome shaped non pedunculated warts</td>
<td>n=5, 2.6 cm in diameter</td>
<td>6 Months</td>
<td>Mild, low grade infection, Inj. Anthiomalone tried</td>
</tr>
<tr>
<td>MSD-10</td>
<td>Dec-2009</td>
<td>Basav Sarkar</td>
<td>ND HF-1, 3 Years</td>
<td>Multiple warts around</td>
<td>Pedunculated club shaped</td>
<td>n=16, 5-10 cm in</td>
<td>7 Months</td>
<td>Moderate</td>
<td></td>
</tr>
</tbody>
</table>

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<table>
<thead>
<tr>
<th>Date</th>
<th>Location</th>
<th>Age</th>
<th>Breed</th>
<th>Sex</th>
<th>Site of Infection</th>
<th>Description</th>
<th>Treatment</th>
<th>Duration</th>
<th>Outcome</th>
<th>Reason for Treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td>MSD-11</td>
<td>Balumati, Islampur, Mursidabad</td>
<td></td>
<td>Bovine:6, HF-2</td>
<td></td>
<td>The eyes</td>
<td>Warts</td>
<td>Inj. Anthiomaline</td>
<td>5 Months</td>
<td>+++</td>
<td>Left untreated</td>
</tr>
<tr>
<td>MSD-12</td>
<td>Belidanga Uttarpara, Belidanga, Mursidabad</td>
<td></td>
<td>CBJ-1, Bovine:7</td>
<td></td>
<td>Warts on ear tips</td>
<td>Mixed type pedunculated warts</td>
<td>Inj. Anthiomaline</td>
<td>3 Months</td>
<td>+</td>
<td>MLD. Inj. Ivermectin tried</td>
</tr>
<tr>
<td>MSD-13</td>
<td>Belldanga Uttarpara, Belldanga, Mursidabad</td>
<td></td>
<td>CBJ-1, 3 Years</td>
<td></td>
<td>Warts on back and thorax</td>
<td>Multiple lobulated and non pedunculated warts</td>
<td>Inj. Anthiomaline</td>
<td>6 Months</td>
<td>++</td>
<td>Severe Inj. Anthiomaline tried</td>
</tr>
<tr>
<td>MSD-14</td>
<td>Belldanga Uttarpara, Belldanga, Mursidabad</td>
<td></td>
<td>Murrah she buffalo-1, 4 years</td>
<td></td>
<td>Paragenital warts (around the vulva)</td>
<td>Wide base papilloma, pedunculated warts</td>
<td>Inj. Anthiomaline</td>
<td>6 Months</td>
<td>+</td>
<td>Mild. Inj. Ivermectin tried</td>
</tr>
<tr>
<td>MSD-15</td>
<td>Belldanga Uttarpara, Belldanga, Mursidabad</td>
<td></td>
<td>CBJ-1, 10 Months</td>
<td></td>
<td>Warts on neck and dewlap</td>
<td>Exophytic cauliflower like pedunculated warts</td>
<td>Inj. Anthiomaline</td>
<td>3 Months</td>
<td>+</td>
<td>Mild. Inj. Ivermectin tried</td>
</tr>
<tr>
<td>MSD-16</td>
<td>Belldanga Uttarpara, Belldanga, Mursidabad</td>
<td></td>
<td>CBJ-1, 5 years</td>
<td></td>
<td>Hind teats only</td>
<td>Round and dome shaped warts</td>
<td>Inj. Anthiomaline</td>
<td>3 Months</td>
<td>+</td>
<td>Mild, low grade infection. Inj. Levamisole tried</td>
</tr>
<tr>
<td>MSD-17</td>
<td>Belldanga Uttarpara, Belldanga, Mursidabad</td>
<td></td>
<td>Murrah she buffalo-1, 4 years</td>
<td></td>
<td>Head, neck, fore limbs and thorax</td>
<td>White cauliflower like pedunculated warts with irregular undulating surface</td>
<td>Inj. Anthiomaline</td>
<td>6 Months</td>
<td>+++</td>
<td>Severe grade infection. Inj. Levamisole tried</td>
</tr>
<tr>
<td>MSD-18</td>
<td>Belldanga Uttarpara, Belldanga, Mursidabad</td>
<td></td>
<td>CBJ-1, 5 years</td>
<td></td>
<td>All four teats</td>
<td>Small nodular and rice grain type warts</td>
<td>Inj. Anthiomaline</td>
<td>6 Months</td>
<td>+++</td>
<td>Moderate Inj. Anthiomaline tried</td>
</tr>
<tr>
<td>MSD-19</td>
<td>Belldanga Uttarpara, Belldanga, Mursidabad</td>
<td></td>
<td>CBJ-1, 4 years</td>
<td></td>
<td>Front two teats</td>
<td>Hard horny pedunculated warts</td>
<td>Inj. Anthiomaline</td>
<td>10 Months</td>
<td>+</td>
<td>Mild. Inj. Ivermectin tried</td>
</tr>
<tr>
<td>MSD-20</td>
<td>Belldanga Uttarpara, Belldanga, Mursidabad</td>
<td></td>
<td>CBJ-1, 4 Years</td>
<td></td>
<td>Hind limbs and paragenital region</td>
<td>Conical non pedunculated warts with a wide base</td>
<td>Inj. Anthiomaline</td>
<td>6 Months</td>
<td>+++</td>
<td>Moderate Inj. Anthiomaline tried</td>
</tr>
<tr>
<td>MSD-21</td>
<td>Belldanga Uttarpara, Belldanga, Mursidabad</td>
<td></td>
<td>CBJ-1, 4 Years</td>
<td></td>
<td>Neck and shoulder</td>
<td>Squat type warts</td>
<td>Inj. Anthiomaline</td>
<td>7 Months</td>
<td>+++</td>
<td>Moderate Inj. Anthiomaline tried</td>
</tr>
<tr>
<td>MSD-22</td>
<td>Belldanga Uttarpara, Belldanga, Mursidabad</td>
<td></td>
<td>CBJ-1, 4 Years</td>
<td></td>
<td>Neck and brisket region</td>
<td>Big cauliflower like pedunculated warts</td>
<td>Inj. Anthiomaline</td>
<td>6 Months</td>
<td>+++</td>
<td>Moderate Inj. Anthiomaline tried</td>
</tr>
<tr>
<td>MSD-23</td>
<td>November-2012</td>
<td>Neta Sk; Kushmore, Nabagram Block</td>
<td>Bovine:6 CBJ Cow-3, CBJ HF-2, CBJ FC-1</td>
<td>CBJ Cow-1, 4 Years</td>
<td>Udder and teats</td>
<td>Tightly adhered wide base fibropapilloma (pedunculated)</td>
<td>n=12, 2-3 cm in diameter</td>
<td>8 Months +++</td>
<td>Moderate</td>
<td>Inj. Anthomaline tried</td>
</tr>
<tr>
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</tr>
<tr>
<td>MSD-24</td>
<td>November-2012</td>
<td>Sermuy Sk; Itsarall, Nabagram Block</td>
<td>Bovine:6 CBJ Cow-4, CBJ HF-2</td>
<td>CBJ Cow-1, 5 Years</td>
<td>All four teats</td>
<td>Small, slender, filiform warts</td>
<td>n=12, 2-3 cm in diameter</td>
<td>6 Months +++</td>
<td>Moderate</td>
<td>Inj. Anthomaline tried</td>
</tr>
<tr>
<td>MSD-25</td>
<td>November-2012</td>
<td>Ranjan Sk; Khojordanga, Nabagram Block</td>
<td>Bovine:6 ND Cow-2, ND FC-2, ND BK-2</td>
<td>ND Bullock-1, 4 Years</td>
<td>Head and shoulder</td>
<td>Flat type non pedunculated warts</td>
<td>n=15, 2-6 cm in diameter</td>
<td>4 Months +++</td>
<td>Moderate</td>
<td>Homeopathic remedy (Thuja orally) tried</td>
</tr>
<tr>
<td>MSD-26</td>
<td>November-2012</td>
<td>Mufaz Sk; Sahebnagar, Nabagram Block</td>
<td>Bovine:6 ND Cow-3, ND HF-2, ND FC-1</td>
<td>ND FC-1, 9 Months</td>
<td>Ear base, periorbital and neck region</td>
<td>Small, sessile type warts</td>
<td>n=12, 2-3 cm in diameter</td>
<td>3 Months +++</td>
<td>Moderate</td>
<td>Homeopathic remedy (Thuja orally) tried</td>
</tr>
<tr>
<td>MSD-27</td>
<td>November-2012</td>
<td>Naru Mondal, Kafula, Nabagram Block</td>
<td>Bubaline:4 Bovine4 Gir Cow-2, Gir FC-2</td>
<td>Surti Buffalo HF-1, 1, Years</td>
<td>Inter scapular region</td>
<td>Round elongated and looked like rice grain</td>
<td>n=10, 2-3 cm in diameter</td>
<td>6 Months ++</td>
<td>Mild, low grade infection. Inj. Levamisole tried</td>
<td></td>
</tr>
<tr>
<td>MSD-28</td>
<td>November-2012</td>
<td>Samsul Sk; Silgram, Nabagram Block</td>
<td>Bovine:6 ND Cow-2, ND FC-2, ND BK-2</td>
<td>ND Bullock-1, 4 Years</td>
<td>Chest and belly</td>
<td>Elevated, non horny club shaped pedunculated warts</td>
<td>n=16, 3-4 cm in diameter</td>
<td>10 Months +++</td>
<td>Moderate</td>
<td>Homeopathic remedy (Thuja orally) tried</td>
</tr>
<tr>
<td>MSD-29</td>
<td>November-2012</td>
<td>Manik Mondal; Khojordanga, Nabagram Block</td>
<td>Bovine:4 CBJ Cow-2, CBJ HF-1, CBJ MC-1</td>
<td>CBJ Heifer-1, 3 Years</td>
<td>Lower abdomen and left axilla</td>
<td>Flat, round, pedunculated, smooth surfaced pink coloured warts</td>
<td>n&gt;30, 2-5 cm in diameter</td>
<td>6 Months +++</td>
<td>Moderate grade, Inj. Levamisole tried</td>
<td></td>
</tr>
<tr>
<td>MSD-30</td>
<td>November-2012</td>
<td>Ananda Mohon Ganguly, Nabagram Block</td>
<td>Bovine:5 CBJ Cow-2, CBJ HF-2, CBJ MC-1</td>
<td>CBJ Cow-1, 5 Years</td>
<td>warts on hind two teats</td>
<td>Frond type</td>
<td>n&gt;20, 1-2 cm in diameter</td>
<td>12 Months +++</td>
<td>Moderate</td>
<td>Homeopathic remedy (Thuja orally) tried</td>
</tr>
<tr>
<td>MSD-31</td>
<td>November-2012</td>
<td>Parimal Mondal, Bilcolony, Nabagram Block</td>
<td>Bovine:4 ND Cow-2, ND FC-2</td>
<td>ND FC-1, 9 Months</td>
<td>Face, neck and fore limbs</td>
<td>Small cauliflower like pedunculated warts</td>
<td>n=30, 2-4 cm in diameter</td>
<td>3 Months +++</td>
<td>Moderate</td>
<td>Homeopathic remedy (Thuja orally) tried</td>
</tr>
<tr>
<td>MSD-32</td>
<td>December-2012</td>
<td>Romjan Sk, Dihigram Aurangabad, Suti-2</td>
<td>Bovine:8 ND Cow-3, ND FC-2, Gir bul1-1, Gir HF-2</td>
<td>Gir sub adult bull-1, 3 Years</td>
<td>Scrotal base and inguinal region</td>
<td>Squat type</td>
<td>n=14, 3-4 cm in diameter</td>
<td>6 Months +++</td>
<td>Moderate grade, Inj. Levamisole tried</td>
<td></td>
</tr>
<tr>
<td>MSD-33</td>
<td>December-2012</td>
<td>Ataur Hussain, Shespur, Suti-2 Block</td>
<td>Bovine:7 ND BK-2, ND Cow-4, ND HF-1</td>
<td>ND Bullock-1, 4 Years</td>
<td>Elbow region</td>
<td>Wide base non pedunculated papilloma</td>
<td>n=2, 4-5 cm in diameter</td>
<td>6 Months +</td>
<td>Mild, surgical cure</td>
<td></td>
</tr>
<tr>
<td>MSD-34</td>
<td>December-2012</td>
<td>Babar Ali Mondal Shespur, Suti-2 Block</td>
<td>Bovine:10 ND Cow-5, Gir HF-3, ND BK-2</td>
<td>Gir HF-1, 20 Months</td>
<td>Eyes only (peri orbital region)</td>
<td>Multiple sessile type warts</td>
<td>n=30, 2-4 cm in diameter</td>
<td>6 Months +++</td>
<td>Inj. Levamisole tried</td>
<td></td>
</tr>
</tbody>
</table>
Table-24: Breed, age group and sex wise synopsis of cutaneous wart (CWT) and teat papilloma (TP) in cattle and buffalo in Murshidabad District of West Bengal

<table>
<thead>
<tr>
<th>Breeds affected</th>
<th>Susceptible population in the affected herd</th>
<th>Total No. of wart cases</th>
<th>Sex</th>
<th>Age group</th>
<th>No of CWT cases</th>
<th>No of TP cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indigenous and non-descript cattle</td>
<td>118</td>
<td>16</td>
<td>F-10</td>
<td>calf hood</td>
<td>3</td>
<td>09</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>sub-adult</td>
<td>7</td>
<td>01</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>adult</td>
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<td></td>
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<td></td>
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<td>old</td>
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<td></td>
<td></td>
<td></td>
<td>M-6</td>
<td></td>
<td>1</td>
<td>6</td>
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<td></td>
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<td></td>
<td></td>
<td>5</td>
<td>N/A</td>
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<tr>
<td>Cross breed cattle (CBJ)</td>
<td>70</td>
<td>14</td>
<td>F-10</td>
<td></td>
<td>1</td>
<td>4</td>
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<td>06</td>
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<td></td>
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<td>N/A</td>
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<tr>
<td>Pure breed cattle</td>
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<tr>
<td>Cross breed cattle (HLX)</td>
<td>3</td>
<td>1</td>
<td>F-1</td>
<td></td>
<td>1</td>
<td>1</td>
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<tr>
<td>Buffalos</td>
<td>16</td>
<td>3</td>
<td>F-3</td>
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<td>-</td>
<td>3</td>
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<tr>
<td>Grand Total</td>
<td>207</td>
<td>34</td>
<td>34</td>
<td></td>
<td>7</td>
<td>27</td>
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<td></td>
<td></td>
<td>11</td>
<td></td>
<td>16</td>
<td>07</td>
</tr>
</tbody>
</table>
Table-25: Field level survey on spontaneous cases of bovine papillomatosis in hill tract of Darjeeling (DGHC), West Bengal

<table>
<thead>
<tr>
<th>Sl. No</th>
<th>Survey period</th>
<th>Farmer’s name &amp; address</th>
<th>Herd strength</th>
<th>Category of animals affected</th>
<th>Gross clinical observations</th>
<th>Severity &amp; duration of infections</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>DJG-1</td>
<td>March-2009</td>
<td>Ashmaya Rai, Raigaon, Gorubathan</td>
<td>Cattle, n=6 BK-2, Cow-2, FC-2</td>
<td>Local hill cow-1, 3 years</td>
<td>Multiple , hard, horny, cauliflower like pedunculated warts(2-3 cm in diameter) on face and neck, n=9</td>
<td>+, Mild, 7 Months</td>
<td>Old history of teat papillomatosis in one cow</td>
</tr>
<tr>
<td>DJG-2</td>
<td>March-2009</td>
<td>Hemant Chhetri, Gairi Gaon, Jholong, Gorubathan</td>
<td>Cattle, n=8 CBJ Cow-4, CBJ FC-2, CBJ HF-2</td>
<td>CBJ cow 1, 4 years</td>
<td>Teat papilloma, rice grain type affecting all four teats (1-1.5 cm), n=8</td>
<td>+, Mild, 6 Months</td>
<td>Homeopathic remedy</td>
</tr>
<tr>
<td>DJG-3</td>
<td>March-2009</td>
<td>Sankarey Kami, Gaingaon, Malkhola, Gorubathan</td>
<td>Cattle, n=5 ND Cow-3, ND HF-2</td>
<td>ND Heifer-1, 2 years</td>
<td>Multiple vegetative solid outgrowths(2-3 cm) on peri orbital area, pedunculated warts, n=12</td>
<td>+++, Moderate, 4 Months</td>
<td>Inj. Anthiomaline by deep I/M</td>
</tr>
<tr>
<td>DJG-4</td>
<td>March-2009</td>
<td>Durga Tamang, Malbusty, Gorubathan</td>
<td>Cattle, n= CBJ Cow-3, CBJ FC-2</td>
<td>CBJ FC-1, 18 Months</td>
<td>Sessile vegetative outgrowths(2-4 cm) on right neck, dewlap and inter scapular region, pedunculated type, n=16</td>
<td>+++, Moderate, 5 Months</td>
<td>Treated by Thuja orally</td>
</tr>
<tr>
<td>DJG-5</td>
<td>March-2009</td>
<td>Subhas Lepcha, Lepchagaon, Fagu, Gorubathan</td>
<td>Siri cattle, n=6 Cow-4, HF-2</td>
<td>Siri cow-1,4 years</td>
<td>Frond type warts(1-1.5 cm in diameter) on all four teats , n&gt;10</td>
<td>+++, Moderate, 4 Months</td>
<td>Inj. Anthiomaline by deep I/M</td>
</tr>
<tr>
<td>DJG-6</td>
<td>March-2009</td>
<td>Jiten Kami, Chota Manging, Gorubathan</td>
<td>Cattle, n= CBJ Cow-3, CBJ FC-2, CBJ MC-1</td>
<td>CBJ FC-1, 10 Months</td>
<td>Multiple pea shaped (1-2 cm) non pedunculated wart crops on face, n=5</td>
<td>+, Mild, 4 Months</td>
<td>Concurrent mange infection, Ivermectin orally</td>
</tr>
<tr>
<td>DJG-7</td>
<td>March-2009</td>
<td>Kailash Kami, Chota Manging, Gorubathan</td>
<td>Cattle, n=8 ND Cow-4, CBJ FC-2, ND HF-2</td>
<td>ND Heifer-1, 2 years</td>
<td>A big (7 cm) solitary vegetative growth on shoulder, pedunculated type, n=1</td>
<td>+, Mild, 4 Months</td>
<td>surgical excision done</td>
</tr>
<tr>
<td>DJG-8</td>
<td>March-2009</td>
<td>Simon Lepcha, Lungsel, Gorubathan</td>
<td>ND Cattle, n=4 ND BK-2, ND Cow-2</td>
<td>ND BK-1, 4 Years</td>
<td>Numerous (n&gt;80 ) cauliflower like , pedunculated -morbid growths on fore limbs, 2-3 cm in diameter</td>
<td>++++, Severe, 6 Months</td>
<td>History of EBH , Autohemotherapy tried</td>
</tr>
<tr>
<td>DJG-9</td>
<td>March-2009</td>
<td>Chandralal Rai, Lungsel, Gorubathan</td>
<td>Cattle, n=6 ND Cow-2, CBJ HF-3, CBJ FC-1</td>
<td>CBJ Heifer-1, 2.5 years</td>
<td>Multiple small (2-3 cm) papillomatous morbid growths on ear, dewlap and thorax, pedunculated warts,n=5</td>
<td>+, Mild, 4 Months</td>
<td>Homeopathic remedy</td>
</tr>
<tr>
<td>DJG-10</td>
<td>March-2009</td>
<td>Tingri Sherpa, Pasiting Gorubathan</td>
<td>Cattle, n=3 CBJ Cow-2, CBJ MC-1</td>
<td>CBJ MC-1, 8 Months</td>
<td>Small nodular warts(1-2 cm in diameter) on face (cheeks) and neck, non pedunculated warts,n=6</td>
<td>+, Mild, 3 Months</td>
<td>Homeopathic remedy</td>
</tr>
<tr>
<td>DJG-11</td>
<td>March-2009</td>
<td>Mannmatha Sharma, Mongargaon, Gorubathan</td>
<td>Cattle, n=5 ND Cow-2, CBJ HF-2, CBJ Bull-1</td>
<td>CBM Heifer-1, 1.5 years</td>
<td>Numerous(n&gt;50) horny warts, tag type, on head, neck and fore left leg, (2-3 cm in diameter)</td>
<td>++++, Severe, 6 Months</td>
<td>Homeopathic remedy</td>
</tr>
<tr>
<td>DJG-12</td>
<td>March-2009</td>
<td>Mankumari Rai, Samsing</td>
<td>Cattle, n=8 ND Heifer-1, 2 years</td>
<td>Sessile, firm, diffuse type warts affecting</td>
<td>++++, Severe,</td>
<td>Autohemotherapy tried</td>
<td></td>
</tr>
<tr>
<td>DJG-13</td>
<td>March-2009</td>
<td>Khasmahal, Gorubathan</td>
<td>ND Cow-4, CBJ FC-2, ND HF-2</td>
<td>whole body (3-5 cm), n&gt;100</td>
<td>extensive papillomatosis, 5 Months</td>
<td>+++, Moderate, 4 Months</td>
<td>Ivermectin orally and autohemotherapy</td>
</tr>
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<tr>
<td>DJG-14</td>
<td>March-2009</td>
<td>Bir Bahadur Subba, Dalimter, Gorubathan</td>
<td>Cattle, n=10 ND BK-2,ND Cow-4, ND HF-4</td>
<td>ND BK-1, 4 Years</td>
<td>Multiple, small (1-2 cm in diameter), round cutaneous, pedunculated papillomas located on muzzle, external nares, ears and peri orbital regions, n=21</td>
<td>++++, Moderate, 4 Months</td>
<td>Ivermectin orally and autohemotherapy</td>
</tr>
<tr>
<td>DJG-15</td>
<td>March-2009</td>
<td>Ashmaya Rai, Raigaon, Gorubathan</td>
<td>Cattle, n=5 Local Hill Cow-2, HF-2, CBJ Bull-1</td>
<td>Darjeeling Hill Heifer-1, 1.5 years</td>
<td>Low, flat, sessile type, with a smooth surface cutaneous lesions on middle of the ear and base of the horn, n=4, 2-3 cm in diameter</td>
<td>++, Mild, 6 Months</td>
<td>Homeopathic remedy</td>
</tr>
<tr>
<td>DJG-16</td>
<td>August-2009</td>
<td>Sukdas Rai, Bichgaon, Gorubathan</td>
<td>Cattle, n=5 ND Cow-2, CBJ HF-2, CBJ Bull-1</td>
<td>ND Heifer-1, 2 years</td>
<td>Typical cauliflower like, pedunculated warts(2-3 cm) involving eyelids and lateral canthus of the eyes, n=6</td>
<td>++, Mild, 4 Months</td>
<td>Homeopathic remedy</td>
</tr>
<tr>
<td>DJG-17</td>
<td>August-2009</td>
<td>Ambar Adhikery, Ahaley, Gorubathan</td>
<td>Cattle, n=7 CBJ Cow-4, CBJ FC-3</td>
<td>CBJ Cow-1, 4 Years</td>
<td>Round, pedunculated tumours, 3-4 cm in diameter, involving head, neck and belly, n=15</td>
<td>++++, Moderate, 5 Months</td>
<td>Inj. Anthiomaline tried</td>
</tr>
<tr>
<td>DJG-18</td>
<td>August-2009</td>
<td>Ashmaya Rai, Raigaon, Gorubathan</td>
<td>Cattle, n=5 ND Cow-2, CBJ HF-2, CBJ Bull-1</td>
<td>CBJ Heifer-1, 1.5 years</td>
<td>Raised, nodular non pedunculated growths at cheek, around the eyes and fore limbs, n=16</td>
<td>++++, Moderate, 4 Months</td>
<td>Homeopathic remedy</td>
</tr>
<tr>
<td>DJG-19</td>
<td>August-2009</td>
<td>Padam Bdr Chetry, Malbusty, Gorubathan</td>
<td>Darjeeling hill cattle, n=8</td>
<td>Local hilly cow-1, 4 Years</td>
<td>Multiple nodular warts(n=8), 1-3 cm in diameter, on rear teats</td>
<td>++, Mild, 4 Months</td>
<td>Inj. Anthiomaline by deep I/M</td>
</tr>
<tr>
<td>DJG-20</td>
<td>August-2009</td>
<td>Dilma Tamang, Nimbusty, Fagu, Gorubathan</td>
<td>Cattle, n=10 ND Cow-5, ND HF-2, ND MC-3</td>
<td>ND Heifer-1, 2 years</td>
<td>Multiple, small(1-2 cm), nodular warts non pedunculated warts (n=20) seen on face, neck and dewlap</td>
<td>++++, Moderate, 4 Months</td>
<td>Treated by Thuja orally</td>
</tr>
<tr>
<td>DJG-21</td>
<td>August-2009</td>
<td>Shiva Kr Rai, Shermali, Gorubathan</td>
<td>Cattle, n=5 ND Cow-2, CBJ HF-2, CBJ FC-1</td>
<td>CBJ HF-1, 4 Years</td>
<td>Dome shaped, round and pea sized warts seen on above the nose, face and neck, n=16</td>
<td>++++, Moderate, 5 Months</td>
<td>Inj. Anthiomaline by deep I/M</td>
</tr>
<tr>
<td>DJG-22</td>
<td>August-2009</td>
<td>Bhim Bdr. Tamang, Tamong Gaon, Dalim GP, Gorubathan</td>
<td>Cattle, n=7 CBJ Cow-4, CBJ FC-3</td>
<td>CBJ Heifer-1, 1.5 years</td>
<td>Cutaneous wart with a broad base and rough and dry top surface, with minimum papillary projections(8 cm in diameter)on the left flank region, n=1</td>
<td>++, Mild, 7 Months</td>
<td>Concurrent mange infection, Ivermectin orally, and surgical cure</td>
</tr>
<tr>
<td>DJG-23</td>
<td>August-2009</td>
<td>Prakash Chetry, Sukuak, Gorubathan</td>
<td>Cattle, n=8 HLX Cow-2,ND Cow-3, ND HF-1</td>
<td>NDHeifer-1, 2 years</td>
<td>Medium sized pedunculated warts (3-4 cm in diameter) seen on face, shoulder and neck region, n=24</td>
<td>++++, Moderate, 4 Months</td>
<td>Duration of wart 3 months, surgical excision done</td>
</tr>
<tr>
<td>DJG-24</td>
<td>April-2010</td>
<td>Latuk Bhutia, Tangta, Tode, Gorubathan</td>
<td>Cattle, n=8 CBJ Cow-2, Local hill Cow-4, CBJ HF-1</td>
<td>CBJ Heifer-1, 2.5 years</td>
<td>Multiple irregular, club shaped , pedunculated warts(2-4 cm in diameter) on</td>
<td>++++, Moderate, 5 Months</td>
<td>Homeopathic remedy</td>
</tr>
</tbody>
</table>

**Results** | 163
<table>
<thead>
<tr>
<th>DJG-25</th>
<th>April-2010</th>
<th>Lama Sherpa, Upper Ghumti Block, Gorubathan</th>
<th>Cattle, n=10</th>
<th>ND Cow-4, ND HF-4, ND MC-2</th>
<th>ND Heifer-1, 3 years</th>
<th>One large, pedunculated cutaneous wart (6 cm) seen on the right eye and three small nodular warts on the lower right neck region (1-2 cm)</th>
<th>+, Mild, 7 Months</th>
<th>Inj. Anthiomaline by deep I/M</th>
</tr>
</thead>
<tbody>
<tr>
<td>DJG-26</td>
<td>April-2010</td>
<td>Pema Sherpa, Sherpagaon, Gorubathan</td>
<td>Cattle, n=10</td>
<td>ND Cow-3, ND HF-4, CBJ HF-3</td>
<td>CBJ HF-1, 2.5 Years</td>
<td>Multiple nodular non pedunculated warts (4-5 cm) with keratotic surface (n=12) seen on face, neck and dewlap region</td>
<td>++++, Moderate, 4 Months</td>
<td>Treated by Thuja orally</td>
</tr>
<tr>
<td>DJG-27</td>
<td>April-2010</td>
<td>Buddhiman Rai, Kumai Tea Estate, Gorubathan</td>
<td>Cattle, n=4</td>
<td>CBJ Cow-2, CBJ HF-2</td>
<td>CBJ Heifer-1, 2 years</td>
<td>Macroscopic skin lesions consistent with apparent fibropapilloma, pedunculated warts (4-5 cm) seen on head, neck and belly, n=9</td>
<td>+, Mild, 7 Months</td>
<td>Inj. Anthiomaline by deep I/M</td>
</tr>
<tr>
<td>DJG-28</td>
<td>April-2010</td>
<td>Sushma Gadaili, Ambiok Busty, Gorubathan</td>
<td>Cattle, n=10</td>
<td>ND Cow-4, ND HF-4, ND MC-2</td>
<td>ND Heifer-1, 2 years</td>
<td>Firm, round (2-3 cm in diameter), multiple non pedunculated skin tumours (n=12) seen on face, neck and fore limbs</td>
<td>++++, Moderate, 4 Months</td>
<td>Concurrent mange infection, Ivermectin orally</td>
</tr>
<tr>
<td>DJG-29</td>
<td>April-2010</td>
<td>Pasan Bhotia, Badey, Gorubathan</td>
<td>Cattle, n=10</td>
<td>ND Cow-4, ND HF-4, ND MC-2</td>
<td>ND Heifer-1, 2 years</td>
<td>Multiple (n=16) nodular non pedunculated warts (1-2 cm diameter) with keratotic surface, seen on the fore limbs</td>
<td>++++, Moderate, 4 Months</td>
<td>Thuja oral therapy</td>
</tr>
<tr>
<td>DJG-30</td>
<td>April-2010</td>
<td>Durga Rai, Paphorkhetti, Gorubathan</td>
<td>Cattle, n=7</td>
<td>ND Cow-4, CBJ HF-1, CBJ FC-2</td>
<td>CBJ Heifer-1, 2.5 years</td>
<td>Uniform weal like eruptions, non pedunculated type (1-2 cm in diameter) on both front teats, n=8</td>
<td>++++, Moderate, 5 Months</td>
<td>History of EBH, Autohemotherapy tried</td>
</tr>
<tr>
<td>DJG-31</td>
<td>April-2010</td>
<td>Gorey Sherpa, Sherpagaon, Gorubathan</td>
<td>Cattle, n=10</td>
<td>ND Cow-4, ND HF-4, ND MC-2</td>
<td>ND Heifer-1, 2 years</td>
<td>Discrete, low, flat, non pedunculated warts (1-1.5 cm in diameter) on ventral abdomen in cluster, n=10</td>
<td>+, Mild, 7 Months</td>
<td>Homeopathic remedy</td>
</tr>
<tr>
<td>DJG-32</td>
<td>April-2010</td>
<td>Bindu Tamang, Mangjing, Gorubathan</td>
<td>Cattle, n=8</td>
<td>CBJ Cow-4, Local hill Cow-2, CBJ HF-2</td>
<td>CBJ HF-1, 4 Years</td>
<td>Peri orbital (3-4 cm) and ear base pedunculated papillomas (4-5 cm), n=9</td>
<td>+, Mild, 6 Months</td>
<td>Inj. Anthiomaline by deep I/M</td>
</tr>
<tr>
<td>DJG-33</td>
<td>April-2010</td>
<td>Teg Bdr. Chetri, Mongargaon, Gorubathan</td>
<td>Cattle, n=4</td>
<td>ND Cow-4, CBJ HF-1</td>
<td>CBJ Heifer-1, 3.5 years</td>
<td>Sessile type warts (3-4 cm) on external nares, mouth and eyelids, n=12</td>
<td>++++, Moderate, 4 Months</td>
<td>Treated by Thuja orally</td>
</tr>
<tr>
<td>DJG-34</td>
<td>April-2010</td>
<td>Chandra Kanta Biswakarma, Sindeybung Busty, Kalimpong</td>
<td>Cattle, n=10</td>
<td>ND Cow-4, ND HF-4, ND MC-2</td>
<td>ND Heifer-1, 2 years</td>
<td>Dome shaped, non pedunculated warts (3-4 cm) with smooth outer surface on all four teats, n=12</td>
<td>++++, Moderate, 5 Months</td>
<td>Inj. Anthiomaline by deep I/M</td>
</tr>
<tr>
<td>DJG-35</td>
<td>April-2010</td>
<td>Sunil Karmakar, Debiganj, Kuhorgari</td>
<td>Cattle, n=8</td>
<td>CBJ Cow-4, CBJ FC-2, CBJ HF-2</td>
<td>CBJ HF-1, 2 Years</td>
<td>Small sessile type warts (2-3 cm) on neck, shoulder and back, n=25</td>
<td>++++, Moderate, 4 Months</td>
<td>Homeopathic remedy</td>
</tr>
<tr>
<td>DJG-36</td>
<td>April-2010</td>
<td>Madhab Rai, Bengajote, Naxalbari Block</td>
<td>Cattle, n=7</td>
<td>ND Cow-4, CBJ FC-2, CBJ HF-1</td>
<td>CBJ Heifer-1, 1.5 years</td>
<td>Small cauliflower like, pedunculated warts (2-3 cm) on fore limbs and baseline of the belly, n=20</td>
<td>++++, Moderate, 4 Months</td>
<td>Inj. Anthiomaline by deep I/M</td>
</tr>
<tr>
<td>DJG-37</td>
<td>April-2010</td>
<td>Shanti Rai, Hatighesa, Naxalbari Block</td>
<td>Cattle, n=7 ND Cow-4, ND HF-1, ND MC-2</td>
<td>ND Heifer-1, 2 years</td>
<td>Pedunculated warts on ears, neck and thorax, n=25, 2-4 cm in diameter</td>
<td>++++, Moderated, 7 Months</td>
<td>Treated by Thuja orally</td>
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<tr>
<td>DJG-38</td>
<td>April-2010</td>
<td>Govinda Mahato, Atol Tea Estate, Naxalbari Block</td>
<td>Cattle, n=5 Hlx Cow-2, CBJ Cow-2, CBJ HF-1</td>
<td>CBJ HF-1, 4 Years</td>
<td>Conical pedunculated warts (2-3 cm in diameter) on perianal and para-genital region, n=8</td>
<td>+, Mild, 6 Months</td>
<td>Inj. Anthiomaline by deep I/M</td>
<td></td>
</tr>
<tr>
<td>DJG-39</td>
<td>April-2010</td>
<td>Santosh Rai, Quarter, Naxalbari Block</td>
<td>Cattle, n=10 ND Cow-4, ND HF-4, CBJ HF-2</td>
<td>CBJ Heifer-1, 1.5 years</td>
<td>Non pedunculated warts (2-4 cm in diameter) on peri-orbital skin and ear tips, n=20</td>
<td>++++, Moderate, 4 Months</td>
<td>Concurrent mange infection, Ivermectin orally</td>
<td></td>
</tr>
<tr>
<td>DJG-40</td>
<td>April-2010</td>
<td>Tousif Sk, Malabari, Naxalbari Block</td>
<td>Cattle, n=7 ND Cow-4, ND HF-1, ND MC-2</td>
<td>ND Heifer-1, 2 years</td>
<td>Nodular and dome shaped, non pedunculated warts (2-3 cm) on fore limbs, n=20</td>
<td>++++, Moderate, 5 Months</td>
<td>Auto hemotherapy</td>
<td></td>
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<tr>
<td>DJG-41</td>
<td>April-2010</td>
<td>Md. Parvej, Rakamjote, Naxalbari Block</td>
<td>Cattle, n=8 ND Cow-4, ND HF-2, CBJ HF-2</td>
<td>CBJ HF-1, 4 Years</td>
<td>Cauliflower like pedunculated warts (2-3 cm in diameter) on peri orbital skin and ear base, n=8</td>
<td>+, Mild, 7 Months</td>
<td>Inj. Anthiomaline tried</td>
<td></td>
</tr>
<tr>
<td>DJG-42</td>
<td>April-2010</td>
<td>Bina Ghosh, Rathtala, Naxalbari Block</td>
<td>Cattle, n=5 Hlx Cow-2, CBJ Cow-2, CBJ HF-1</td>
<td>CBJ Heifer-1, 3.5 years</td>
<td>Round, pedunculated tumours, 3-4 cm in diameter, involving head, neck and belly, n=15</td>
<td>++++, Moderate, 6 Months</td>
<td>Homeopathic remedy</td>
<td></td>
</tr>
<tr>
<td>DJG-43</td>
<td>April-2010</td>
<td>Sampad Rai, Dhaknajote, Naxalbari Block</td>
<td>Cattle, n=10 ND Cow-4, ND HF-4, ND MC-2</td>
<td>ND Heifer-1, 2 years</td>
<td>Raised, nodular pedunculated growths (2-3 cm in diameter) at cheek, around the eyes and fore limbs, n=16</td>
<td>++++, Moderate, 4 Months</td>
<td>Inj. Anthiomaline by deep I/M</td>
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</table>
### Table-26: Breed, age group and sex wise synopsis of cutaneous wart (CWT) and teat papilloma (TP) in cattle and buffalo in Darjeeling District (DGHC) of Bengal

<table>
<thead>
<tr>
<th>Breeds affected</th>
<th>Susceptible animal numbers in the affected herds</th>
<th>No.of clinical wart cases</th>
<th>Sex</th>
<th>Age group</th>
<th>No of CWT cases</th>
<th>No of TP cases</th>
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<tbody>
<tr>
<td>Indigenous and non-descript cattle</td>
<td>162</td>
<td>19</td>
<td>F-17</td>
<td>calf hood</td>
<td>14</td>
<td>2</td>
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<tr>
<td></td>
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<td>sub-adult</td>
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<td>M-2</td>
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<td>14</td>
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<td>03</td>
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<tr>
<td>Cross breed cattle (CBJ)</td>
<td>96</td>
<td>24</td>
<td>F-23</td>
<td>calf hood</td>
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<td>21</td>
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<td>19</td>
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<tr>
<td>Cross breed cattle (PJ)</td>
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<td>calf hood</td>
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<tr>
<td>Cross breed cattle (HLX)</td>
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<tr>
<td>Buffalo</td>
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<td>F</td>
<td>calf hood</td>
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<tr>
<td>Grand Total</td>
<td>264</td>
<td>43</td>
<td>F-40</td>
<td>calf hood</td>
<td>03</td>
<td>38</td>
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<td>sub-adult</td>
<td>33</td>
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</table>
Table 27: Field level survey on spontaneous cases of cutaneous papillomatosis (warts) in the District of Jalpaiguri of West Bengal

<table>
<thead>
<tr>
<th>Sl No</th>
<th>Period of survey</th>
<th>Owners name and address</th>
<th>Herd strength</th>
<th>Category of animals affected</th>
<th>Location and type of wart</th>
<th>No and size</th>
<th>Severity and duration of infection</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>JPG-1</td>
<td>June 2012</td>
<td>Partha Ghosh Station Para, Ward no 11</td>
<td>Cattle-4 CBJ Cow-2, HLX Cow-1, CBJ MC-1</td>
<td>CBJ Cow-1, 3 Years</td>
<td>Multiple rounded and club shaped solid non pedunculated warts on neck, shoulder region and around eyes</td>
<td>n =16, 5-8 cm in diameter</td>
<td>++++, 6 months</td>
<td>Moderate, Thuja orally tried</td>
</tr>
<tr>
<td>JPG-2</td>
<td>June 2012</td>
<td>Ashutosh Ghosh BDO Office para, Dhupguri Block, Ward No-10</td>
<td>Cattle-5 ND Cow-2, Sahiwal HF-2, CBJ HF-1</td>
<td>Graded Sahiwal Cow-1, 3 Years</td>
<td>Round and dome shaped warts on all four teats</td>
<td>n =9, 2-3 cm in diameter</td>
<td>+, 5 Months</td>
<td>Mild, Levamisole oral therapy</td>
</tr>
<tr>
<td>JPG-3</td>
<td>June 2012</td>
<td>Subrata Barman Surjya Sen Colony, Ward No-5</td>
<td>Cattle-4 ND Cow-2, CBJ Cow-1, CBJ Bull calf-1</td>
<td>CBJ Bull calf-1, 18 Months</td>
<td>Cauliflower like pedunculated warts around the scrotum, left axilla and around the anus</td>
<td>n =20, 3-4 cm in diameter</td>
<td>++++, 5 Months</td>
<td>Moderate, Inj. Anthiomaline tried</td>
</tr>
<tr>
<td>JPG-4</td>
<td>June 2012</td>
<td>Govinda Sarkar Madhya Goragori, Barghoria GP</td>
<td>Cattle-4 ND Cow-2, ND FC-2</td>
<td>ND FC, 13 Months</td>
<td>Circular to elongated, rough, horny sessile type warts on poll region and both sides of the neck</td>
<td>n =8, 2-3 cm in diameter</td>
<td>++++, 6 months</td>
<td>Mild, Thuja orally</td>
</tr>
<tr>
<td>JPG-5</td>
<td>June 2012</td>
<td>Ananta Ghosh Hata Colony, Ward No-10</td>
<td>Cattle-8 ND COW-4, CBJ HF-3, CBJ MC-1</td>
<td>CBJ HF, 2.6 Years</td>
<td>Sessile type warts on neck, chest and belly, projecting like towel surface</td>
<td>n =24, 3-4 cm in diameter</td>
<td>+, 5 Months</td>
<td>Moderate, Inj. Anthiomaline tried</td>
</tr>
<tr>
<td>JPG-6</td>
<td>June 2012</td>
<td>Mahammad Sabu Kalir Hat, Magurmari GP</td>
<td>Cattle-7 CBJ Cow-4, CBJ HF-3</td>
<td>CBJ Cow-1, 3 Years</td>
<td>Extensive cauliflower like pedunculated warts on fore limbs, back and barrel</td>
<td>n =55, 3-7 cm in diameter</td>
<td>++++, 7 Months</td>
<td>Severe, Levamisole oral therapy</td>
</tr>
<tr>
<td>JPG-7</td>
<td>June 2012</td>
<td>Santosh Ghosh Chengmari, Mal Block</td>
<td>Cattle-7 ND Cow-3, ND MC-1</td>
<td>ND MC-1, 12 Months</td>
<td>Multiple rounded and club shaped solid pedunculated warts on neck, shoulder region and around eyes</td>
<td>n =15, 3-5 cm in diameter</td>
<td>+++, 6 months</td>
<td>Moderate, Thuja orally tried</td>
</tr>
<tr>
<td>JPG-8</td>
<td>June 2012</td>
<td>Harka Bahadur Chetri, Chengmari Mal Block</td>
<td>Cattle-7 ND Cow-4, ND HF-2, ND FC-1</td>
<td>ND HF-1, 2 Years</td>
<td>Extensive cauliflower like pedunculated warts on neck, fore limbs, back and belly</td>
<td>n =35, 3-6 cm in diameter</td>
<td>++++, 6 months</td>
<td>Moderate, Thuja orally tried</td>
</tr>
<tr>
<td>JPG-9</td>
<td>June 2012</td>
<td>Daya Tamang Damdim, Mal Block</td>
<td>Cattle-4 ND Cow-3, ND MC-1 ND HF-1</td>
<td>ND Cow-1, 4 Years</td>
<td>Round and dome shaped warts on all four teats</td>
<td>n =12, 2-3 cm in diameter</td>
<td>++++, 5 Months</td>
<td>Moderate, Inj. Anthiomaline tried</td>
</tr>
<tr>
<td>JPG-10</td>
<td>June 2012</td>
<td>Aravinda Ghosh Damdim, Mal Block</td>
<td>Cattle-7 HLX Cow-1, HLX HF-1</td>
<td>HLX HF-1, 3 Years</td>
<td>Multiple rounded and club shaped solid non pedunculated warts on neck</td>
<td>n =15, 3-5 cm in diameter</td>
<td>++++, 6 months</td>
<td>Moderate, Thuja orally</td>
</tr>
<tr>
<td>No.</td>
<td>Date</td>
<td>Cattle Details</td>
<td>Owner Details</td>
<td>Description</td>
<td>Quantity</td>
<td>Diameter</td>
<td>Duration</td>
<td>Treatment</td>
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<tr>
<td>JPG-11</td>
<td>June 2012</td>
<td>ND Cow-3, ND BK-2</td>
<td>Shantaram Singh, Damdim, Mal Block</td>
<td>Round and dome shaped warts on all four teats</td>
<td>9</td>
<td>2-3 cm</td>
<td>5 Months</td>
<td>Thuja orally</td>
</tr>
<tr>
<td>JPG-12</td>
<td>June 2012</td>
<td>Cattle-3 CBJ Cow-2, CBJ HF-1</td>
<td>Chandra kanta Biswakarma, Damdim, Mal Block</td>
<td>Round and dome shaped warts on all four teats</td>
<td>12</td>
<td>2-3 cm</td>
<td>6 months</td>
<td>Thuja orally</td>
</tr>
<tr>
<td>JPG-13</td>
<td>June 2012</td>
<td>ND BK-1, ND Cow-2, ND FC-1</td>
<td>Krishna Sarkar Kumalai</td>
<td>Hard horny cauliflower like pedunculated warts on back and left armpit</td>
<td>14</td>
<td>2-3 cm</td>
<td>6 months</td>
<td>Thuja orally</td>
</tr>
<tr>
<td>JPG-14</td>
<td>June 2012</td>
<td>Cattle-3 HLX Cow-2 HLX HF-1</td>
<td>Bijoy Hore Odlabari</td>
<td>Multiple, small cauliflower like pedunculated warts on Peri orbital region</td>
<td>12</td>
<td>2-3 cm</td>
<td>6 months</td>
<td>Inj. Anthiomaline</td>
</tr>
<tr>
<td>JPG-15</td>
<td>June 2012</td>
<td>ND Cow-2, HLX Cow-2, HLX FC-2</td>
<td>Bikash Rai Malbazar</td>
<td>Rice grain type warts on rear teats</td>
<td>8</td>
<td>1-3 cm</td>
<td>5 Months</td>
<td>Thuja orally</td>
</tr>
</tbody>
</table>
Table-28: Breed, age group and sex wise synopsis of cutaneous wart (CWT) and teat papilloma (TP) in cattle and buffalo in Jalpaiguri District of West Bengal

<table>
<thead>
<tr>
<th>Breeds affected</th>
<th>No. of susceptible animals with in the BP affected herds</th>
<th>Total No of clinical wart cases</th>
<th>Sex</th>
<th>Age group</th>
<th>No of CWT cases</th>
<th>No of TP cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indigenous and non-descript cattle</td>
<td>41</td>
<td>6</td>
<td>F-4</td>
<td>1</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>M-2</td>
<td></td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Cross breed cattle (CBJ)</td>
<td>24</td>
<td>6</td>
<td>F-5</td>
<td>1</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>M-1</td>
<td>1</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Pure breed cattle</td>
<td>-</td>
<td>-</td>
<td>F</td>
<td></td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>M</td>
<td></td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Cross breed cattle (HLX)</td>
<td>10</td>
<td>3</td>
<td>F-3</td>
<td>2</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>M</td>
<td></td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Buffalo</td>
<td>-</td>
<td>-</td>
<td>F</td>
<td></td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>M</td>
<td></td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Grand Total</td>
<td>75</td>
<td>15</td>
<td>F-12</td>
<td>2</td>
<td>5</td>
<td>8</td>
</tr>
</tbody>
</table>
Table-29: Field survey and clinicopathological observations on cutaneous bovine papillomatosisin Maldaha District of West Bengal

<table>
<thead>
<tr>
<th>Sl No</th>
<th>Survey period</th>
<th>Owners name &amp; address</th>
<th>Species &amp; herd strength</th>
<th>Category of animal</th>
<th>Distribution of wart</th>
<th>Type of wart</th>
<th>No &amp; size</th>
<th>Severity of infection &amp; duration</th>
<th>Remarks (severity and treatment modality adopted)</th>
</tr>
</thead>
<tbody>
<tr>
<td>MDH-1</td>
<td>December-2009</td>
<td>Chabita Mandal Amjantala, Maldaha</td>
<td>Bovine: 6 ND Cow-3, CBJ Cow-2, CBJ HF-1</td>
<td>CBJ Cow-1, 4 Years</td>
<td>Head, back and chin</td>
<td>Small cauliflower like pedunculated warts</td>
<td>n=15, 2-3 cm in diameter</td>
<td>+++ , 5 Months</td>
<td>Moderate , Homeopathic remedy (Thuja-200X orally)</td>
</tr>
<tr>
<td>MDH-2</td>
<td>December-2009</td>
<td>Kajo 1 Mandal Amjantala, Maldaha</td>
<td>Bovine:10 CBJ BK-2, ND Cow-5, ND MC-2, ND HF-1</td>
<td>CBJ BK-1, 3.0 Years</td>
<td>Neck, dewlap and back</td>
<td>Round, nodular, solid non pedunculated growths</td>
<td>n=12, 1-3 cm in diameter</td>
<td>+++ , 8 Months</td>
<td>Moderate, Levamisole oral therapy</td>
</tr>
<tr>
<td>MDH-3</td>
<td>December-2009</td>
<td>Dilip Mondal Madhabnagar</td>
<td>Buffalo:8 She buff-6, MB HF-2</td>
<td>Murrah she buffalo-1, 4 years</td>
<td>Interscapular region</td>
<td>Exophytic cauliflower like pedunculated warts</td>
<td>n=16, 3-4 cm in diameter</td>
<td>+++ , 7 Months</td>
<td>Moderate, Inj. Anthiomaline tried</td>
</tr>
<tr>
<td>MDH-4</td>
<td>December-2009</td>
<td>Krishna Mandal Jagadishpur</td>
<td>Bovine:9 CBJ BK-2, ND Cow-5, ND HF-2</td>
<td>CBJ BK-1, 3 Years</td>
<td>Left neck and back</td>
<td>Squat type warts</td>
<td>n=20, 2-3 cm in diameter</td>
<td>+++ , 5 Months</td>
<td>Moderate, Levamisole oral therapy</td>
</tr>
<tr>
<td>MDH-5</td>
<td>December-2009</td>
<td>Mangal Mandal Jagadishpur</td>
<td>Bovine:4 ND Cow-2, CBJ Cow-1, CBJ MC-1</td>
<td>CBJ Cow-1, 3 years</td>
<td>Fore limbs only</td>
<td>Cauliflower like pedunculated warts</td>
<td>n=25, 2-4 cm in diameter</td>
<td>+++ , 6 Months</td>
<td>Moderate, Left untreated</td>
</tr>
<tr>
<td>MDH-6</td>
<td>December-2009</td>
<td>Purna Majumder, Maheshpur</td>
<td>Bubaline:5 MFB-6</td>
<td>Murrah she buffalo-1, 6 years</td>
<td>Teats only</td>
<td>Small nodular warts</td>
<td>n=12, 1-3 cm in diameter</td>
<td>+++ , 10 Months</td>
<td>Moderate, Thuja 200X orally given</td>
</tr>
<tr>
<td>MDH-7</td>
<td>December-2009</td>
<td>Shankar Das, Kotuali, Malda</td>
<td>Bovine: 6 ND Cow-3, CBJ Cow-2, ND HF-1</td>
<td>CBJ Cow-1, 3 years</td>
<td>Muzzle, ears and neck</td>
<td>Scattered club shaped pedunculated warts</td>
<td>n=20, 2-3 cm in diameter</td>
<td>+++ , 7 Months</td>
<td>Moderate, Inj. Ivermectin tried</td>
</tr>
<tr>
<td>MDH-8</td>
<td>December-2009</td>
<td>Dinesh Mandal, Baragrahia</td>
<td>Bovine:10 CBJ BK-2, ND Cow-5, ND FC-2, ND HF-1</td>
<td>CBJ BK-1, 3.5 Years</td>
<td>Head, neck and trunk</td>
<td>Sessile type warts</td>
<td>n=12, 1-3 cm in diameter</td>
<td>+++ , 7 Months</td>
<td>Moderate, Surgical intervention made</td>
</tr>
<tr>
<td>MDH-9</td>
<td>December-2009</td>
<td>Muktar Sk, Mongalbari</td>
<td>Bubaline:8 MB HF-3, MB she Buff-5</td>
<td>Murrah she buffalo-1, 4 years</td>
<td>Face, eyes and ear pinna</td>
<td>Cauliflower like pedunculated warts</td>
<td>n=15, 2-3 cm in diameter</td>
<td>+++ , 5 Months</td>
<td>Moderate, Inj. Anthiomaline tried</td>
</tr>
<tr>
<td>MDH-10</td>
<td>December-2009</td>
<td>Tarun Das, Nityanandapur</td>
<td>Bovine:9 CBJ BK-2 ND Cow-4, ND HF-3</td>
<td>CBJ BK-1, 3.5 Years</td>
<td>Hind limbs</td>
<td>Small nodular non pedunculated warts</td>
<td>n=12, 1-3 cm in diameter</td>
<td>+++ , 8 Months</td>
<td>Moderate, Levamisole oral therapy</td>
</tr>
<tr>
<td>MDH-11</td>
<td>December-2009</td>
<td>Subol Poddar, Nimaibari, Malda</td>
<td>Bovine:4 CBJ Cow-2, CBJ HF-1, CBJ FC-1</td>
<td>CBJ Cow-1, 3 years</td>
<td>Left axilla and ventral abdomen</td>
<td>Scattered club shaped pedunculated warts</td>
<td>n=16, 3-4 cm in diameter</td>
<td>++++, 7 Months</td>
<td>Moderate, Thuja 200x orally</td>
</tr>
<tr>
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<td>------------------------------------------------</td>
</tr>
<tr>
<td>MDH-12</td>
<td>August-2012</td>
<td>Jogesh Mondal, Saraswati Pally, Malda</td>
<td>Bovine:5 CBJ Cow-3, CBJ FC- 2</td>
<td>CBJ FC-1,12 Months</td>
<td>Head, neck and shoulder</td>
<td>Sessile type warts</td>
<td>n=20, 2-3 cm in diameter</td>
<td>++++, 5 Months</td>
<td>Moderate, Thuja 200X orally given</td>
</tr>
<tr>
<td>MDH-13</td>
<td>August-2012</td>
<td>Ratan Pramanik, Netaji Colony</td>
<td>Bovine:7 CBJ BK-2, ND Cow-4, ND HF-1</td>
<td>CBJ BK-1, 4 Years</td>
<td>Neck and shoulder</td>
<td>Large exophytic pedunculated warts with wide base</td>
<td>n=15, 3-4 cm in diameter</td>
<td>+, 7 Months</td>
<td>Mild, Surgical remedy</td>
</tr>
<tr>
<td>MDH-14</td>
<td>August-2012</td>
<td>Subodh Ghosh, Madhaipur, Malda</td>
<td>Bubaline:4 MB she Buff-4</td>
<td>Murrah she buffalo, 4 years</td>
<td>Teats only</td>
<td>Plaque type non pedunculated warts</td>
<td>n=15, 2-3 cm in diameter</td>
<td>++++, 5 Months</td>
<td>Moderate, Autohemotherapy and Thuja orally</td>
</tr>
<tr>
<td>MDH-15</td>
<td>August-2012</td>
<td>Abdul Matin, Jatradanga, Malda</td>
<td>Bovine:7 CBJ BK-2, ND Cow-4, ND HF-1</td>
<td>CBJ BK-1, 4 Years</td>
<td>Chest and barrel</td>
<td>Hard, horny pedunculated warts</td>
<td>n=12, 1-3 cm in diameter</td>
<td>++++, 8 Months</td>
<td>Moderate, Inj. Anthiomaline tried</td>
</tr>
<tr>
<td>MDH-16</td>
<td>August-2012</td>
<td>Ratan Ghosh, Kamaladanga, Malda</td>
<td>Bovine:11 CBJ Cow-4, CBJ HF-2, ND Cow-4, ND MC-1</td>
<td>CBJ Cow-1, 5 years</td>
<td>All four teats</td>
<td>Plaque type non pedunculated warts</td>
<td>n=16, 3-4 cm in diameter</td>
<td>++++, 7 Months</td>
<td>Moderate, Levamisole oral therapy</td>
</tr>
<tr>
<td>MDH-17</td>
<td>August-2012</td>
<td>Sanjib Mandal, Raipur, Malda</td>
<td>Bovine:6 MB HF-2, MB FC-1, MB she Buff-3</td>
<td>Murrah she buffalo-1, 4 years</td>
<td>Perigenital region /around the vulva</td>
<td>Flat, irregular, exophytic warts with fissured surface</td>
<td>n=10, 3-5 cm in diameter</td>
<td>++++, 5 Months</td>
<td>Moderate, Thuja 200X orally</td>
</tr>
<tr>
<td>MDH-18</td>
<td>August-2012</td>
<td>Pintu Ghosh, Netajipara, Malda</td>
<td>Bovine:10 ND Cow-4, ND FC-2, CBJ Cow-3, CBJ MC-1</td>
<td>CBJ Cow-11, 5 years</td>
<td>Teats and udder</td>
<td>Dome shaped warts</td>
<td>n=15, 1-3 cm in diameter</td>
<td>++++, 5 Months</td>
<td>Moderate, Thuja 200X orally given</td>
</tr>
<tr>
<td>MDH-19</td>
<td>November-2012</td>
<td>Sual Das, Meradul, Malda</td>
<td>Bovine:8 ND Cow-5, CBJ Cow-1, CBJ HF-2</td>
<td>CBJ Cow-1, 3 years</td>
<td>Neck and shoulder</td>
<td>Squat type warts</td>
<td>n=12, 1-3 cm in diameter</td>
<td>++++, 8 Months</td>
<td>Moderate, Inj. Anthiomaline tried</td>
</tr>
<tr>
<td>MDH-20</td>
<td>November-2012</td>
<td>MD Mostafa, Jadapur, Malda</td>
<td>Bovine:9 ND Cow-5, ND HF-3,ND FC-1</td>
<td>ND FC-1, 19 Months</td>
<td>Ventral abdomen and inner side of left thigh region</td>
<td>Cauliflower like pedunculated warts</td>
<td>n=16, 3-4 cm in diameter</td>
<td>++++, 7 Months</td>
<td>Moderate, Levamisole oral therapy</td>
</tr>
<tr>
<td>MDH-21</td>
<td>November-2012</td>
<td>Najul SK, Kamarpur, Malda</td>
<td>Bovine: 6 ND BK-2, ND Cow-3, ND MC-1</td>
<td>ND BK-1, 4 Years</td>
<td>Chest and barrel</td>
<td>Small nodular non pedunculated warts</td>
<td>n=20, 2-3 cm in diameter</td>
<td>++++, 5 Months</td>
<td>Moderate, Thuja 200X orally</td>
</tr>
<tr>
<td>MDH-22</td>
<td>November-2012</td>
<td>Budhu Karmakar, Krishnapally</td>
<td>Bovine:10 ND Cow-5, ND FC-3, CBJ BK-1, 3 Years</td>
<td>Hind limbs and anal periphery</td>
<td>Scattered club shaped pedunculated warts</td>
<td></td>
<td>n=25, 2-4 cm in diameter</td>
<td>++++, 6 Months</td>
<td>Moderate, Inj. Anthiomaline tried</td>
</tr>
<tr>
<td>MDH-23</td>
<td>November-2012</td>
<td>Nakul Saha, Bhanna Bigha, Malda</td>
<td>Bovine:8 ND Cow-5, CBJ Cow-1, CBJ HF-2</td>
<td>CBJ Cow, 4 Years</td>
<td>Perigenital region and teats</td>
<td>Sessile type exophytic warts</td>
<td>n=15, 2-3 cm in diameter</td>
<td>++++, 5 Months</td>
<td>Moderate, Levamisole oral therapy</td>
</tr>
<tr>
<td>MDH-24</td>
<td>November-2012</td>
<td>Akbar Sk, Govindapur, Malda</td>
<td>Bovine:9 ND Cow-4, CBJ Cow-1, ND HF-3, ND FC-1</td>
<td>CBJ Cow-1, 5 years</td>
<td>Teats and udder</td>
<td>Squat type exophytic warts</td>
<td>n=12, 1-3 cm in diameter</td>
<td>++++, 8 Months</td>
<td>Moderate, Thuja 200X Inj. By S/C route</td>
</tr>
<tr>
<td>MDH-25</td>
<td>November-2012</td>
<td>Tapan Sarkar, Dalalpur</td>
<td>Bovine:4 ND Cow-2, ND BK-2</td>
<td>ND Bullock-1, 4 Years</td>
<td>Neck and shoulder</td>
<td>Cauliflower like pedunculated warts</td>
<td>n=16, 3-4 cm in diameter</td>
<td>++++, 7 Months</td>
<td>Moderate, Thuja 200X Inj. By S/C route</td>
</tr>
<tr>
<td>MDH-26</td>
<td>November-2012</td>
<td>Aloka Ghosh, Golapganj, Kaliachak-3</td>
<td>Bovine:5 ND Cow-3, ND FC-2</td>
<td>ND FC-1, 9 Months</td>
<td>Udder and teat hillock</td>
<td>Small nodular non pedunculated warts</td>
<td>n=20, 2-3 cm in diameter</td>
<td>++++, 5 Months</td>
<td>Moderate, Thuja 200X Inj. By S/C route</td>
</tr>
<tr>
<td>MDH-27</td>
<td>November-2012</td>
<td>Bhadesh Ghosh, Golapganj, Kaliachak-3</td>
<td>Buffalo: 6 MB HF-3, MB she Buffalo-1</td>
<td>Murrah She Buffalo-1, 4 Years</td>
<td>Chest and barrel</td>
<td>White cauliflower like pedunculated warts</td>
<td>n=15, 2-3 cm in diameter</td>
<td>++++, 6 Months</td>
<td>Moderate, Surgical intervention made</td>
</tr>
<tr>
<td>MDH-28</td>
<td>November-2012</td>
<td>Khare Sk, Banstala, Kaliachak-3</td>
<td>Bovine:6 HLX Cow-2, HLX FC-2, ND Cow-2</td>
<td>HLX Cow-1, 4 Years</td>
<td>All four teats</td>
<td>Squat type exophytic warts</td>
<td>n=12, 1-3 cm in diameter</td>
<td>++++, 6 Months</td>
<td>Moderate, Levamisole oral therapy</td>
</tr>
<tr>
<td>MDH-29</td>
<td>November-2012</td>
<td>Jakir Sk, Banstala, Kaliachak-3</td>
<td>Bovine:10 ND Cow-4, CBJ HF-1, CBJ Cow-1, ND HF-3, ND FC-1</td>
<td>CBJ HF-1, 3 Years</td>
<td>Perigenital region</td>
<td>Cauliflower like pedunculated warts</td>
<td>n=16, 3-4 cm in diameter</td>
<td>++++, 5 Months</td>
<td>Moderate, Thuja 200X Inj. By S/C route</td>
</tr>
<tr>
<td>MDH-30</td>
<td>November-2012</td>
<td>Selim Ali, Charkatala, Kaliachak-3</td>
<td>Bovine:8 ND Cow-3, ND HF-1, ND BK-2, CBJ Cow-2</td>
<td>CBJ Cow-1, 5 years</td>
<td>Teats and udder</td>
<td>Small nodular warts</td>
<td>n=20, 2-3 cm in diameter</td>
<td>++++, 8 Months</td>
<td>Moderate, Inj. Anthiomaline tried</td>
</tr>
<tr>
<td>MDH-31</td>
<td>November-2012</td>
<td>Abdul Sk, Baburbona, Kaliachak-3</td>
<td>Bovine:9 ND Cow-4, ND HF-3, ND FC-2</td>
<td>ND FC-1, 7 Months</td>
<td>Neck and shoulder</td>
<td>Reticulated pedunculated warts</td>
<td>n=25, 2-4 cm in diameter</td>
<td>++++, 7 Months</td>
<td>Moderate, Levamisole oral therapy</td>
</tr>
<tr>
<td>MDH-32</td>
<td>November-2012</td>
<td>Saneet Ali, Baburbona, Kaliachak-3</td>
<td>Bovine:4 ND Cow-2, ND FC-2</td>
<td>ND FC-1, 9 Months</td>
<td>Fore limbs and peri orbital region</td>
<td>Small cauliflower like pedunculated warts</td>
<td>n=15, 2-3 cm in diameter</td>
<td>++++, 5 Months</td>
<td>Moderate, Thuja 200X Inj. By S/C route</td>
</tr>
<tr>
<td>MDH-33</td>
<td>November-2012</td>
<td>MD Mintu Sk, Sandhaha, Kaliachak-3</td>
<td>Bovine:5 ND Cow-2, Sahiwal Cow-2, ND FC-1</td>
<td>Sahiwal cow, 6 Years</td>
<td>Teats and udder</td>
<td>Dome shaped warts</td>
<td>n=12, 1-3 cm in diameter</td>
<td>++++, 6 Months</td>
<td>Moderate, Thuja 200X Inj. By S/C route</td>
</tr>
<tr>
<td>MDH-34</td>
<td>November-2012</td>
<td>Mojamul Hak, Debipur, Ratua-1</td>
<td>Bovine: 6 ND Cow-3, ND MC-2</td>
<td>ND Cow-1, 4 Years</td>
<td>All four teats</td>
<td>Small filliform warts</td>
<td>n=16, 3-4 cm in diameter</td>
<td>++++, 10 Months</td>
<td>Moderate, Inj. Ivermectin tried</td>
</tr>
<tr>
<td>MDH-35</td>
<td>December 2012</td>
<td>Santosh Karmakar, Debipur, Ratua-1</td>
<td>Bovine: ND HF-1, ND Cow-5, ND HF-3, CBJ HF-2</td>
<td>CBJ HF-1, 3 Years</td>
<td>Perigenital region</td>
<td>Small cauliflower like pedunculated warts</td>
<td>n=20, 2-3 cm in diameter</td>
<td>++++, 5 Months</td>
<td>Moderate, Inj. Anthiomaline tried</td>
</tr>
<tr>
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<td>---</td>
</tr>
<tr>
<td>MDH-36</td>
<td>December 2012</td>
<td>Manwar Hussain, Ratua</td>
<td>Bovine: ND Cow-3, ND HF-2, CBJ HF-2</td>
<td>CBJ Cow-1, 5 years</td>
<td>Teats and udder</td>
<td>Rice grain and pea shaped warts</td>
<td>n=15, 2-3 cm in diameter</td>
<td>++++, 5 Months</td>
<td>Moderate, Levamisole oral therapy</td>
</tr>
<tr>
<td>MDH-37</td>
<td>December 2012</td>
<td>Samrat SK, Ratua</td>
<td>Bovine: ND Cow-4, ND BK-2, ND FC-2, ND MC-1</td>
<td>ND FC-1, 10 Months</td>
<td>Neck and shoulder</td>
<td>Small, nodular non pedunculated warts</td>
<td>n=12, 1-3 cm in diameter</td>
<td>++++, 8 Months</td>
<td>Moderate, Thuja 200X Inj. By S/C route</td>
</tr>
<tr>
<td>MDH-38</td>
<td>December 2012</td>
<td>Sahil SK, Ratua</td>
<td>Bovine: ND Cow-3, ND FC-1</td>
<td>ND FC-1, 12 Months</td>
<td>Neck and shoulder</td>
<td>Big cauliflower like pedunculated warts</td>
<td>n=16, 3-4 cm in diameter</td>
<td>++++, 7 Months</td>
<td>Moderate, Thuja 200X Inj. By S/C route</td>
</tr>
<tr>
<td>MDH-39</td>
<td>December 2012</td>
<td>A.B. Sarkar, Bhangole, Harischandrapur-1</td>
<td>Bovine: ND Cow-2, ND HF-2, Hlx Cow-1</td>
<td>Hlx Cow-1, 6 Years</td>
<td>Teats only</td>
<td>Small dome shaped warts</td>
<td>n=20, 2-3 cm in diameter</td>
<td>++++, 5 Months</td>
<td>Moderate, Inj. Ivermectin tried</td>
</tr>
<tr>
<td>MDH-40</td>
<td>December 2012</td>
<td>SK Liakat, Daulatpur, Harischandrapur-1</td>
<td>Bovine: ND BK-2, ND Cow-3, ND FC-1</td>
<td>ND BK-1, 4 Years</td>
<td>Chest and barrel</td>
<td>Cauliflower like pedunculated warts</td>
<td>n=25, 2-4 cm in diameter</td>
<td>++++, 5 Months</td>
<td>Moderate, Autohemotherapy tried</td>
</tr>
<tr>
<td>MDH-41</td>
<td>December 2012</td>
<td>Jyotsna Bibi, Daulatpur, Harischandrapur-1</td>
<td>Bovine: ND Cow-4, ND HF-1, CBJ HF-2</td>
<td>CBJ HF-1, 3 Years</td>
<td>All four teats</td>
<td>Rice grain type</td>
<td>n=8, 1-2 cm in diameter</td>
<td>++++, 5 Months</td>
<td>Mild, Inj Anthiomaline tried</td>
</tr>
</tbody>
</table>
Table-30: Breed, age group and sex wise synopsis of cutaneous wart (CWT)and teat papilloma (TP) in cattle and buffalo in the District of Maldaha

<table>
<thead>
<tr>
<th>Breeds affected</th>
<th>Susceptible animal population in the BP affected herds</th>
<th>Total No. of wart cases</th>
<th>Sex</th>
<th>Age group</th>
<th>No of CWT cases</th>
<th>No of TP cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indigenous and non-descript cattle</td>
<td>188</td>
<td>11</td>
<td>F-8</td>
<td>Calf hood</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>M-3</td>
<td>Sub-adult</td>
<td>3</td>
<td>N/A</td>
</tr>
<tr>
<td>Cross breed cattle (CBJ)</td>
<td>57</td>
<td>22</td>
<td>F-15</td>
<td>Adult</td>
<td>11</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>M-7</td>
<td>Old</td>
<td>7</td>
<td>N/A</td>
</tr>
<tr>
<td>Pure breed cattle (PJ)</td>
<td>-</td>
<td>-</td>
<td>F</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>M</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Cross breed cattle (HLX)</td>
<td>5</td>
<td>2</td>
<td>F-2</td>
<td>-</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>M</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Buffalo</td>
<td>38</td>
<td>6</td>
<td>F-6</td>
<td>-</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>M</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Grand Total</td>
<td>288</td>
<td>41</td>
<td>F-31</td>
<td>-</td>
<td>28</td>
<td>13</td>
</tr>
</tbody>
</table>

Results | 174
Table 31: Field level survey on spontaneous cases of cutaneous papillomatosis (warts) in the District of Coochbehar of West Bengal

<table>
<thead>
<tr>
<th>Sl No</th>
<th>Period of survey</th>
<th>Owners name &amp; address</th>
<th>Herd strength</th>
<th>Category of animals affected</th>
<th>Location and type of the wart</th>
<th>No and size</th>
<th>Severity and duration of infection</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>CBR-1</td>
<td>December-2011</td>
<td>Keshab Barman Solemari, Mekhliganj Block</td>
<td>Cattle:19 ND Cow-6, ND BK-2, ND HF-6, CBJ Cow-3, CBJ MC-2</td>
<td>CBJ Cow-1, 3 Years</td>
<td>Multiple rounded and club shaped solid non pedunculated warts on neck, shoulder region and around eyes</td>
<td>n=20, 5-8 cm in diameter</td>
<td>++++, 6 months</td>
<td>Moderate, Thuja orally tried</td>
</tr>
<tr>
<td>CBR-2</td>
<td>December-2011</td>
<td>Prasanna Rai Solemari, Mekhliganj Block</td>
<td>Cattle:10 ND Cow-4, ND BK-2, Sahiwal HF-3, Sahiwal MC-1</td>
<td>Graded Sahiwal HF-1, 2 Years</td>
<td>Rounded and finger like pedunculated warts on around the eyes and face</td>
<td>n= 7, 2-3 cm in diameter</td>
<td>+, 5 Months</td>
<td>Mild, Levamisole oral therapy</td>
</tr>
<tr>
<td>CBR-3</td>
<td>December-2011</td>
<td>Shibu Roy Uchalpukuria Mekhliganj Block</td>
<td>Cattle:9 ND Cow-3, CBJ Cow-3, CBJ HF-2, CBJ MC-1</td>
<td>CBJ MC-1, 14 Months</td>
<td>Cauliflower like pedunculated warts around the scrotum, axilla and anus</td>
<td>n=15, 3-4 cm in diameter</td>
<td>+++, 5 Months</td>
<td>Moderate, Inj. Anthiomaline tried</td>
</tr>
<tr>
<td>CBR-4</td>
<td>December-2011</td>
<td>Jagadish Hore Ranirhat Mekhliganj Block</td>
<td>Cattle:8 ND Cow-4, ND HF-3, ND MC-1</td>
<td>ND Cow-1, 3 Years</td>
<td>Circular to elongated, rough, horny sessile type warts on poll region and both sides of the neck</td>
<td>n=8, 2-3 cm in diameter</td>
<td>+, 6 months</td>
<td>Mild, Thuja orally</td>
</tr>
<tr>
<td>CBR-5</td>
<td>December-2011</td>
<td>Anath Barman Sattibari, Mekhliganj Block</td>
<td>Cattle:6 CBJ Cow-2, CBJ HF-1, ND Cow-3</td>
<td>CBJ Cow-1, 3 Years</td>
<td>Sessile type warts on neck, chest and belly, projecting like towel surface</td>
<td>n=35, 3-4 cm in diameter</td>
<td>+++, 5 Months</td>
<td>Moderate, Inj. Anthiomaline tried</td>
</tr>
<tr>
<td>CBR-6</td>
<td>December-2011</td>
<td>Madhusudan Rai Sattibari, Mekhliganj Block</td>
<td>Cattle:7 ND Cow-5, ND BK-2, ND FC-2</td>
<td>ND BK-1, 4 Years</td>
<td>Multiple cauliflower like pedunculated warts on fore limbs, back and barrel</td>
<td>n=15, 3-7 cm in diameter</td>
<td>+++, 7 Months</td>
<td>Moderate, Inj. Anthiomaline</td>
</tr>
<tr>
<td>CBR-7</td>
<td>December-2011</td>
<td>Rajen Barman 183, Solemari, Mekhliganj Block</td>
<td>Cattle:5 ND BK-2, ND Cow-3</td>
<td>ND BK-1, 3 Years</td>
<td>Cauliflower like pedunculated warts on head, neck, inside of the left fore arm, armpit and thigh</td>
<td>n=18, 3-4 cm in diameter</td>
<td>+++,6 Months</td>
<td>Moderate Inj. Anthiomaline</td>
</tr>
</tbody>
</table>
Table-32: Breed, age group and sex wise synopsis of cutaneous wart (CWT)and teat papilloma (TP) in cattle and buffalo in Coochbehar District of Bengal

<table>
<thead>
<tr>
<th>Breeds affected</th>
<th>Susceptible animal population in the affected herds</th>
<th>Total No. of clinical wart cases</th>
<th>Sex</th>
<th>Age group</th>
<th>No of CWT cases</th>
<th>No of TP cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indigenous and non-descript cattle</td>
<td>50</td>
<td>4</td>
<td>F-2</td>
<td>Calf hoof</td>
<td>2</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>M-2</td>
<td>Sub-adult</td>
<td>-</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Adult</td>
<td>2</td>
<td>N/A</td>
</tr>
<tr>
<td>Cross breed cattle (CBJ)</td>
<td>14</td>
<td>3</td>
<td>F-2</td>
<td>Adult</td>
<td>2</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>M-1</td>
<td>Old</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Pure breed cattle</td>
<td>-</td>
<td>-</td>
<td>F</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>M</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Buffalo</td>
<td>-</td>
<td>-</td>
<td>F</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>M</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Grand Total</td>
<td>64</td>
<td>7</td>
<td>F-6</td>
<td>Calf hoof</td>
<td>1</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>M-1</td>
<td>Sub-adult</td>
<td>3</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Adult</td>
<td>3</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Old</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>
### Table-33: Institutional survey on the recorded incidence of bovine papillomatosis in Bankura District, West Bengal

<table>
<thead>
<tr>
<th>Sl No</th>
<th>Name of the centre</th>
<th>Name of the farmer</th>
<th>O. P. No</th>
<th>Date</th>
<th>Category of animal</th>
<th>Gross pathological observations</th>
<th>Duration of infection</th>
<th>Remarks on severity of affections</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>ABAHC, Ratanpur, Onda Block</td>
<td>Jayanta Mondal Baliguma</td>
<td>2295</td>
<td>14.10.11</td>
<td>NDMC-1, 11 Months</td>
<td>Multiple nodular warts on head, face and neck, n&gt;20</td>
<td>3 months</td>
<td>Moderate,+++., Autohemotherapy</td>
</tr>
<tr>
<td>2</td>
<td>ABAHC, Ratanpur, Onda Block</td>
<td>Bidyut Patra, Kadagote</td>
<td>2360</td>
<td>19.10.11</td>
<td>CBJ FC-1, 12 Months</td>
<td>Dome shaped warts on head, face and back, n=8</td>
<td>More than 4 months</td>
<td>Mild, + , Surgical cure</td>
</tr>
<tr>
<td>3</td>
<td>ABAHC, Ratanpur, Onda</td>
<td>Kalpana Mollaha Ratanpur</td>
<td>2575</td>
<td>11.11.11</td>
<td>ND MC-1, 10 Months</td>
<td>Papulonodules on limbs and trunk, n&gt;10</td>
<td>3 months approx.</td>
<td>Moderate,+++., Thuja orally</td>
</tr>
<tr>
<td>4</td>
<td>ABAHC, Ratanpur, Onda</td>
<td>Mahadev Ghosh, Ratanpur</td>
<td>2610</td>
<td>15.11.11</td>
<td>ND BK-1, 4 Years</td>
<td>Solitary wart on neck(6cm), n=1, 8 cm</td>
<td>6 months</td>
<td>Mild, +, Surgical cure</td>
</tr>
<tr>
<td>5</td>
<td>ABAHC, Ratanpur, Onda</td>
<td>Lalu Rai Mahadevpur</td>
<td>2808</td>
<td>2.12.11</td>
<td>ND BK-1, 3 Years</td>
<td>Numerous warts on head, neck and trunk with undulating outer surface, n&gt;30</td>
<td>4 months approx</td>
<td>Moderate,+++., Autohemotherapy</td>
</tr>
<tr>
<td>6</td>
<td>ABAHC, Ratanpur, Onda</td>
<td>Bapi Dubey Dumuria</td>
<td>3314</td>
<td>4.2.12</td>
<td>CBJ Cow-1</td>
<td>Warts on abdomen strongly attached to dermis, n=12</td>
<td>6 months approx</td>
<td>Moderate,+++., Autohemotherapy</td>
</tr>
<tr>
<td>7</td>
<td>ABAHC, Ratanpur, Onda</td>
<td>Arjun Karnakar Kamardiha</td>
<td>3609</td>
<td>12.3.12</td>
<td>CBJ Cow-1, 4 Years</td>
<td>Frond type warts on teats, n=10</td>
<td>6 months approx</td>
<td>Moderate,+++., Autohemotherapy</td>
</tr>
<tr>
<td>8</td>
<td>BAHC, Shashpur,</td>
<td>Jyoti Patra Bhurbandi</td>
<td>480</td>
<td>25.09.10</td>
<td>CBJ Cow-1, 4 Years</td>
<td>Rice grain type warts on teats, n&lt;10</td>
<td>4 months approx</td>
<td>Mild, +, Thuja orally</td>
</tr>
<tr>
<td>9</td>
<td>BAHC, Shashpur,</td>
<td>Sitol Sarkar Saspur</td>
<td>688</td>
<td>13.12.10</td>
<td>ND HF-1, 2 Years</td>
<td>Single, solitary wide base wart (7cm)on neck</td>
<td>7 months</td>
<td>Mild,+, Surgical cure</td>
</tr>
<tr>
<td>10</td>
<td>BAHC, Shashpur,</td>
<td>Gopaldev Sharma Donvaron</td>
<td>392</td>
<td>30.12.11</td>
<td>CBJ Cow-1, 3 Years</td>
<td>Warts as if bunch of grapes on neck, dewlap, brisket and fore limbs, n&gt;50</td>
<td>8 months</td>
<td>Severe, ++++, Inj. Anthiomaline</td>
</tr>
<tr>
<td>11</td>
<td>BAHC, Shashpur,</td>
<td>Amal Ghosh Shaspur</td>
<td>393</td>
<td>30.12.11</td>
<td>ND HF-1, 2 Years</td>
<td>Multiple dome shaped warts on head, neck and thorax, n=20</td>
<td>6 months</td>
<td>Moderate,+++., Autohemotherapy</td>
</tr>
<tr>
<td>12</td>
<td>BAHC, Bankura-1</td>
<td>Mansaram Rai Chatardih</td>
<td>3316</td>
<td>01.11.11</td>
<td>CBJ MC-1, 12 Months</td>
<td>Multiple pedunculated warts on fore limbs, n&gt;20</td>
<td>4 months</td>
<td>Moderate, ++, Inj. Anthiomaline</td>
</tr>
<tr>
<td>13</td>
<td>BAHC, Bankura-1</td>
<td>Rabilochon Shit Puranomy, Jambony</td>
<td>3565</td>
<td>25.03.11</td>
<td>ND BK-1, 4 Years</td>
<td>Big (8 cm)cauliflower like wart on neck, jaw</td>
<td>5 months</td>
<td>Mild,+, Surgical cure</td>
</tr>
<tr>
<td>14</td>
<td>SAHC, Indas</td>
<td>Rabindra Nath Dhara Mirjapur</td>
<td>8965/60</td>
<td>27.01.12</td>
<td>CBJ MC-1, 10 Months</td>
<td>Multiple dome shaped warts on head, neck and thorax, n&gt;30</td>
<td>4 months</td>
<td>Moderate,+++., Autohemotherapy</td>
</tr>
</tbody>
</table>

Results | 177
<p>| 15 | SAHC, Indas | Joydebl Mahi. Charigram, Indas Block | 8869/82 | 24.01.12 | ND BK-1, 4 Years | Hard horny warts on lower neck region, n=6 | 4 months | Mild,+, Surgical cure |
| 16 | SAHC, Indas | S k. Samsuddin Hiyatnagar, Indas Block | 459/3 | 19.04.12 | ND HF-1, 3 Years | Multiple cauliflower like warts on head, fore limbs and sides of belly, n=50 | 4 months | Severe, ++++, Inj. Anthiomaline |
| 17 | SAHC, Indas | Dilip Midya Hiat Nagar Indas Block | 654/30 | 23.04.12 | CBJ cow-1, 4 Years | Frond type warts on teats, n=10 | 5 months | Moderate, +++, Inj. Anthiomaline |
| 18 | SAHC, Indas | Puspa Dalui Haripur, Indas Block | 1450/12 | 26.05.12 | CBJ Bull-1, 3 Years | Around prepuce and perineum, n=8 | 5 months | Mild, +, Surgical cure |
| 19 | SAHC, Indas | Madhab Dey Mirjapur, Indas Block | 5875/28 | 20.12.10 | CBJ Cow-1,4 Years | Frond type warts on teats, n=10 | 4 months | Moderate, +++, Inj. Anthiomaline |
| 20 | SAHC, Indas | Niranj C. Dey, Meral, Indas Block | 8219/78 | 07.03.11 | CBJ Cow-1, 5 Years | Rice grain type warts on teats, n=10 | 4 months | Moderate, +++, Inj. Anthiomaline |
| 21 | BAHC, Patrasayer | Suchand Ghosh, Ghiai , Patrasayer | 130 | 20.04.12 | ND MC-1, 12 Months | Multiple cauliflower like warts on head, neck, fore limbs and sides of belly, n=30 | 4 months | Moderate, +++, Inj. Anthiomaline |
| 22 | BAHC, Patrasayer | Jhantu Kar, Patrasayer | 299 | 20.05.12 | CBJ HF-1,2.5 Years | Small cauliflower like warts on face and limbs, n=20 | 5 months | Moderate, +++, Autohemotherapy |
| 23 | BAHC, Patrasayer | Bidyut Dan Hatkrishnagar | 942 | 22.07.10 | CBJ HF-1, 2 Years | Multiple cauliflower like warts on hind limbs, axillae and sides of belly, n=30 | 4 months | Moderate, +++, Autohemotherapy |
| 24 | BAHC, Patrasayer | Biplab Mal Padua | 1306 | 21.08.10 | CBJ HF-1, 3 Years | Frond type warts on teats, n=10 | 5 months | Mild, +, Thuja orally |
| 25 | BAHC, Patrasayer | Kayal Lohar Patrasayer | 922 | 16.08.11 | ND MC-1, 10 Months | Nodular warts on fore limbs, n=15 | 5 months | Moderate, +++, Autohemotherapy |
| 26 | BAHC, Patrasayer | Najrul Mallick Tajchak | 997 | 24.08.11 | CBJ HF-1, 3 Years | Cauliflower like warts on head, neck and back, n=20 | 5 months | Moderate, +++, Autohemotherapy |
| 27 | BAHC, Patrasayer | Sk. Rafik, Fakirdanga | 1113 | 06.09.11 | ND MC-1,10 Months | Multiple cauliflower like warts on face, fore limbs and both sides of belly, n=20 | 3 months | Moderate, +++, Inj. Anthiomaline |
| 28 | BAHC, Patrasayer | Paresh Sarkar, Grambera | 1251 | 16.09.11 | CBJ HF-1 | Small cauliflower like warts on hind limbs and perianal region, n=30 | 3 months | Moderate, +++, Inj. Anthiomaline |
| 29 | BAHC, Patrasayer | Susil Goswami, Patulia | 3007 | 28.03.12 | CBJ Cow-1, 3 years | Small, club shaped warts on neck and fore limbs, n=6 | 5 months | Mild, +, Surgical cure |
| 30 | BAHC, Indpur | Gobardhan Mondal, Raghunathpur | 1537 | 04.12.09 | ND BK-1, 3 Years | Spheroid, hard horny warts on shoulder and back, n=5 | 5 months | Mild, +, Surgical cure |
| 31 | BAHC, Indpur | Bhablu Baori, Bajoa | 2012 | 25.02.10 | ND BK-1, 3 Years | Small cauliflower like neck and fore limbs, n=15 | 3 months | Moderate, +++, Inj. Anthiomaline |
| 32 | BAHC, Indpur | Bittu Baori, | 4059 | 01.02.11 | ND BK-1, 3 Years | Small cauliflower like warts on head, neck and fore limbs, n=15 | 4 months | Moderate, +++, Autohemotherapy |</p>
<table>
<thead>
<tr>
<th>#</th>
<th>Location</th>
<th>Name</th>
<th>Identification</th>
<th>Treatment</th>
<th>Duration</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>33</td>
<td>BAHC, Bishnupur</td>
<td>Abu Taher Khan, Marat</td>
<td>CBJ HF-1, 2.5 Years</td>
<td>Small, nodular warts on hind limbs and perianal region, n&gt;15</td>
<td>3 months</td>
<td>Anthiomaline</td>
</tr>
<tr>
<td>34</td>
<td>BAHC, Bishnupur</td>
<td>Ali Hussain Mallick, Khorikasuli, Marat</td>
<td>ND BK-1, 3 Years</td>
<td>Small cauliflower like warts on hind limbs and perianal region, n&gt;30</td>
<td>5 months</td>
<td>Anthiomaline</td>
</tr>
<tr>
<td>35</td>
<td>BAHC, Bishnupur</td>
<td>Lakshmi Lohar, Sonardanga</td>
<td>CBJ MC-1, 11 Months</td>
<td>Extensive warts on head, neck and fore limbs, n&gt;50</td>
<td>3 months</td>
<td>Autohemotherapy</td>
</tr>
<tr>
<td>36</td>
<td>BAHC, Bishnupur</td>
<td>Bankim Kapri, Bishnupur</td>
<td>CBJ Cow-1, 3 years</td>
<td>Rice grain type warts on teats crest, n&gt;10</td>
<td>5 months</td>
<td>Anthiomaline</td>
</tr>
<tr>
<td>37</td>
<td>BAHC, Bishnupur</td>
<td>Jojnal Mondal, 2 No Camp, Marat</td>
<td>ND Heifer, 2 Years</td>
<td>Numerous club shaped warts on head, neck, dewlap and brisket, n&gt;50</td>
<td>5 months</td>
<td>Autohemotherapy</td>
</tr>
<tr>
<td>38</td>
<td>BAHC, Bishnupur</td>
<td>Mianobi Mondal, Maral</td>
<td>ND BK-1, 3 Years</td>
<td>Small cauliflower like warts on neck and thorax, n=4</td>
<td>3 months</td>
<td>Surgical care</td>
</tr>
<tr>
<td>39</td>
<td>ABAHC, Rasulpur</td>
<td>Shekh Sakir, Kantadighi</td>
<td>Gir HF-1, 2 Years</td>
<td>Multiple cauliflower like warts on fore limbs and sides of belly, n&gt;10</td>
<td>4 months</td>
<td>Anthiomaline</td>
</tr>
<tr>
<td>40</td>
<td>ABAHC, Rasulpur</td>
<td>Aravinda Bose, Betur</td>
<td>ND HF-1, 3 Years</td>
<td>Small cauliflower like warts on hind limbs and perianal region, n&gt;15</td>
<td>6 months</td>
<td>Anthiomaline</td>
</tr>
<tr>
<td>41</td>
<td>ABAHC, Rasulpur</td>
<td>Basanta Roy, Bigpur</td>
<td>CBJ Cow-1, 3 Years</td>
<td>Multiple cauliflower like warts on fore limbs, thorax and sides of belly</td>
<td>6 months</td>
<td>Anthiomaline</td>
</tr>
<tr>
<td>42</td>
<td>ABAHC, Rasulpur</td>
<td>Sarama Bagdi, Raghunathpur</td>
<td>ND MC-1, 12 Months</td>
<td>Multiple dome shaped warts on head, neck and thorax, n=15</td>
<td>4 months</td>
<td>Autohemotherapy</td>
</tr>
<tr>
<td>43</td>
<td>ABAHC, Rasulpur</td>
<td>Raju Middya, Fakirdanga</td>
<td>Gir HF-1, 2 Years</td>
<td>Multiple dome shaped warts on face, neck and thorax, n=15</td>
<td>4 months</td>
<td>Autohemotherapy</td>
</tr>
<tr>
<td>44</td>
<td>ABAHC, Rasulpur</td>
<td>Ainal Haque, Kantadighi</td>
<td>ND HF-1, 3 Years</td>
<td>Multiple squat type warts on head, ear tips, neck and belly, n&gt;20</td>
<td>3 months</td>
<td>Anthiomaline</td>
</tr>
<tr>
<td>45</td>
<td>ABAHC, Rasulpur</td>
<td>Manju Middya, Rasupur</td>
<td>ND MC-1, 11 Months</td>
<td>Multiple dome shaped warts on head, neck and around the eyes, n&gt;30</td>
<td>4 months</td>
<td>Anthiomaline</td>
</tr>
<tr>
<td>46</td>
<td>ABAHC, Rasulpur</td>
<td>Nimai Roy, Betur</td>
<td>ND HF-1, 3 Years</td>
<td>CCWT with bilateral fore limbs affection, n&gt;20</td>
<td>3 months</td>
<td>Anthiomaline</td>
</tr>
<tr>
<td>47</td>
<td>ABAHC, Rasulpur</td>
<td>Sk Rahamat, Kazirdanga</td>
<td>CBJ HF-1, 2.5 Years</td>
<td>Hard, horny, small pedunculated warts on limbs and thorax, n&gt;10</td>
<td>6 months</td>
<td>Autohemotherapy</td>
</tr>
<tr>
<td>48</td>
<td>ABAHC, Rasulpur</td>
<td>Taher Middya, Bansdaha</td>
<td>CBJ FC-1, 12 Months</td>
<td>Multiple nodular and dome shaped pedunculated warts on ears, head, neck and around the eyes, n&gt;20</td>
<td>6 months</td>
<td>Autohemotherapy</td>
</tr>
</tbody>
</table>
## Table-34: Institutional search summary of cutaneous and teat warts of cattle and buffaloes as recorded in Veterinary clinics in Bankura

<table>
<thead>
<tr>
<th>Breeds affected</th>
<th>No. of clinical wart cases recorded in clinics</th>
<th>Sex</th>
<th>Age group</th>
<th>Cutaneous wart cases</th>
<th>Teat wart cases</th>
</tr>
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<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Calf hood</td>
<td>Sub-adult</td>
<td>Adult</td>
</tr>
<tr>
<td>Indigenous and non</td>
<td>27</td>
<td>F-9</td>
<td>-</td>
<td>7</td>
<td>2</td>
</tr>
<tr>
<td>descript</td>
<td></td>
<td>M-18</td>
<td>9</td>
<td>1</td>
<td>8</td>
</tr>
<tr>
<td>CBJ</td>
<td>21</td>
<td>F-17</td>
<td>2</td>
<td>5</td>
<td>10</td>
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<tr>
<td></td>
<td></td>
<td>M-4</td>
<td>3</td>
<td>1</td>
<td>-</td>
</tr>
<tr>
<td>PJ</td>
<td>-</td>
<td>F</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td>M</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>HLX</td>
<td>-</td>
<td>F</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td>M</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Buffalo</td>
<td>-</td>
<td>F</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td>M</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Grand Total</td>
<td>48</td>
<td>F-26</td>
<td>14</td>
<td>14</td>
<td>20</td>
</tr>
</tbody>
</table>
Table-35: Institutional survey on the recorded incidence of bovine papillomatosis in Birbhum District of West Bengal

<table>
<thead>
<tr>
<th>Sl No</th>
<th>Name of the centre</th>
<th>Name of the farmer</th>
<th>O.P. No</th>
<th>Date</th>
<th>Category of animal</th>
<th>Gross pathological observations</th>
<th>Duration of infection</th>
<th>Remarks on severity of affections &amp; treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>ABAHC, Brahmankhanda, Nanoor</td>
<td>Sridhar Das Noanagar</td>
<td>2030</td>
<td>05.03.10</td>
<td>ND FC-1, 12 Months</td>
<td>Small cauliflower like warts on fore limbs, neck and dewlap, n&gt;30</td>
<td>6 months</td>
<td>Moderate, +++, Inj. Ivermectin tried</td>
</tr>
<tr>
<td>2</td>
<td>ABAHC, Brahmanhanda, Nanoor</td>
<td>Sure Hawk Brahmanhanda</td>
<td>2624</td>
<td>07.03.11</td>
<td>ND MC-1, 10 Months</td>
<td>Cauliflower like warts (3-5 cm) on all four limbs and barrel, n&gt;30</td>
<td>5 months</td>
<td>Moderate, +++, Inj. Anthimoline</td>
</tr>
<tr>
<td>3</td>
<td>ABAHC, Brahmanhanda, Nanoor</td>
<td>Sufal Majhi Santra</td>
<td>336</td>
<td>06.06.11</td>
<td>CBJ MC-1, 10 Months</td>
<td>Numerous club shaped warts on hind limbs, axillae and at the perineum, n&gt;50</td>
<td>5 months</td>
<td>Severe, +++, Autohemotherapy</td>
</tr>
<tr>
<td>4</td>
<td>ABAHC, Brahmanhanda, Nanoor</td>
<td>Seikh Ramjan Alkula</td>
<td>2306</td>
<td>04.11.11</td>
<td>ND BK-1, 3 Years</td>
<td>Scattered, typical pedunculated warts (3-5 cm) on head, neck and trunk, n&gt;20</td>
<td>6 months</td>
<td>Moderate, +++, Inj. Anthimoline</td>
</tr>
<tr>
<td>5</td>
<td>ABAHC, Brahmanhanda, Nanoor</td>
<td>Seikh Azim Dapparana</td>
<td>2330</td>
<td>08.11.11</td>
<td>ND BK-1, 3 Years</td>
<td>Big cauliflower like warts (5-8 cm) on back and loin, n&gt;5</td>
<td>6 months</td>
<td>Mild, +, Surgical cure</td>
</tr>
<tr>
<td>6</td>
<td>ABAHC, Brahmanhanda, Nanoor</td>
<td>Madhai Hajra Goalpara</td>
<td>3211</td>
<td>15.02.12</td>
<td>Gir Cow-1, 4 Years</td>
<td>Warts on udder and teats, n&gt;10</td>
<td>5 months</td>
<td>Moderate, +++, Inj. Anthimaine</td>
</tr>
<tr>
<td>7</td>
<td>ABAHC, Bahiri, Bolpur</td>
<td>Raju Patra Bahiri</td>
<td>2802</td>
<td>18.02.11</td>
<td>ND HF-1, 3 Years</td>
<td>Whole body papillomatosis, n&gt;50</td>
<td>7 months, Severe, ++++, Inj. Ivermectin</td>
<td>Moderate, ++++, Inj. Anthimoline</td>
</tr>
<tr>
<td>8</td>
<td>ABAHC, Bahiri, Bolpur</td>
<td>DilipKhar, Bahiri</td>
<td>777</td>
<td>13.7.11</td>
<td>Gir Cow-1, 3 Years</td>
<td>Rice grain type warts on all four teats, TP, n&gt;20</td>
<td>6 months</td>
<td>Moderate, ++++, Inj. Anthimoline</td>
</tr>
<tr>
<td>9</td>
<td>ABAHC, Bahiri, Bolpur</td>
<td>Chatra Das, Bahiri</td>
<td>1145</td>
<td>30.08.11</td>
<td>ND HF-1, 2.5 Years</td>
<td>Whole body papillomatosis, n&gt;60</td>
<td>5 months’ Severe, ++++, Inj. Anthimoline</td>
<td>Moderate, ++++, Inj. Anthimoline</td>
</tr>
<tr>
<td>10</td>
<td>ABAHC, Bahiri, Bolpur</td>
<td>Haradhan Mal, Bahiri</td>
<td>1538</td>
<td>12.10.11</td>
<td>Gir HF-1, 2.5 Years</td>
<td>Extensive wart like lesions (2-5 cm) with diffuse distribution on all four limbs, both sides of the neck and barrel, n&gt;100</td>
<td>6-Months</td>
<td>Severe, ++++, Inj. Ivermectin</td>
</tr>
<tr>
<td>11</td>
<td>ABAHC, Bahiri, Bolpur</td>
<td>Ananda Lohar, Joykrishnapur</td>
<td>1724</td>
<td>04.11.11</td>
<td>MB BK-1, 4 Years</td>
<td>Cauliflower like warts on peri anal region, n&gt;10</td>
<td>4 months</td>
<td>Moderate, +++, Inj. Anthimaine</td>
</tr>
<tr>
<td>12</td>
<td>SAHC, Birbhum</td>
<td>Bablu Bagdi, Kalipur, Suri-I</td>
<td>467</td>
<td>16.04.12</td>
<td>Sahiwal HF-1, 2 Years</td>
<td>Peri orbital papillomatosis warts around the eyes, n&gt;20</td>
<td>6 months</td>
<td>Moderate, +++, Inj. Anthimaine</td>
</tr>
<tr>
<td>Case No.</td>
<td>Location</td>
<td>Case Name</td>
<td>Date of Birth</td>
<td>Breed</td>
<td>Age</td>
<td>Description of Warts</td>
<td>Number of Warts</td>
<td>Duration</td>
</tr>
<tr>
<td>----------</td>
<td>----------</td>
<td>-----------</td>
<td>---------------</td>
<td>-------</td>
<td>-----</td>
<td>----------------------</td>
<td>----------------</td>
<td>---------</td>
</tr>
<tr>
<td>13</td>
<td>ABAHC, Rampurhat-I</td>
<td>Mahasom Seikh, Pratappur, Rampurhat</td>
<td>816</td>
<td>01.10.10</td>
<td>CBJ Cow-1,3 years</td>
<td>Paragenital warts, n&lt;10</td>
<td>6 months,</td>
<td>Mild,+, Surgical excision</td>
</tr>
<tr>
<td>14</td>
<td>ABAHC, Rampurhat-I</td>
<td>Dulal Seikh, Lomodarup</td>
<td>158</td>
<td>15.02.11</td>
<td>ND Bull-1, 3 years</td>
<td>Multiple cauliflower like warts (2-5 cm) on face, neck and shoulder, n&gt;20</td>
<td>6 months,</td>
<td>Moderate, +++, Inj. Anthiomaine</td>
</tr>
<tr>
<td>15</td>
<td>ABAHC, Rampurhat-I</td>
<td>Dulal Seikh, Lomodarup</td>
<td>159</td>
<td>15.02.11</td>
<td>CBJ young Bull-1, 3 years</td>
<td>Multiple cauliflower like warts (2-5 cm) on head, neck and shoulder, n&gt;20</td>
<td>6 months,</td>
<td>Moderate, +++, Inj. Anthiomaine</td>
</tr>
<tr>
<td>16</td>
<td>ABAHC, Rampurhat-I</td>
<td>Nanda Kr Mondal, Salimpur</td>
<td>1645</td>
<td>14.03.11</td>
<td>CBJ HF-1, 2 years</td>
<td>Small cauliflower like warts on head, neck, fore limbs and brisket region, n&gt;30</td>
<td>6 months,</td>
<td>Moderate, +++, Inj. Ivermectin</td>
</tr>
<tr>
<td>17</td>
<td>ABAHC, Rampurhat-I</td>
<td>Ananta Mondal, Salimpur</td>
<td>180</td>
<td>10.05.11</td>
<td>ND MC-1, 10 Months</td>
<td>Confluent warty growths on fore limbs and thorax, n&gt;50</td>
<td>4 months,</td>
<td>Severe, +++, Autohemotherapy</td>
</tr>
<tr>
<td>18</td>
<td>ABAHC, Rampurhat-I</td>
<td>Govinda Pandey, Aoyar</td>
<td>567</td>
<td>28.05.12</td>
<td>CBJ FC-1, 10 Months</td>
<td>Small cauliflower like warts (2-3 cm) on peri-orbital region and on ear tips, n&gt;20</td>
<td>3 months,</td>
<td>Moderate, +++, Inj. Anthiomaine</td>
</tr>
<tr>
<td>19</td>
<td>SAHC, Murarai</td>
<td>Ashrakul Seikh, Balia, Rampurhat</td>
<td>40115</td>
<td>31.03.2011</td>
<td>CBJ HF-1, 2 years</td>
<td>Cauliflower like warts (3-5 cm) on head, neck and barrel, n&gt;30</td>
<td>6 months</td>
<td>Moderate, +++, Inj. Anthiomaine</td>
</tr>
<tr>
<td>20</td>
<td>SAHC, Murarai</td>
<td>Md. Sahabuddin Kanakpur</td>
<td>408</td>
<td>05.05.2012</td>
<td>Gir FC-1, 12 Months</td>
<td>Small, scattered, cauliflower like warts (2-5 cm) on both the fore limbs and chest, n&gt;20</td>
<td>6 months</td>
<td>Moderate, +++, Inj. Anthiomaine</td>
</tr>
<tr>
<td>21</td>
<td>SAHC, Murarai</td>
<td>Paresh Nath Sahoo, Dhananjoypur, Rampurhat</td>
<td>593</td>
<td>28.05.12</td>
<td>CBJ Heifer-1, 2 years</td>
<td>Numerous cauliflower like warts (2-3 cm) on all four limbs and both sides of the neck, n&gt;50</td>
<td>5 months</td>
<td>Severe, +++, Autohemotherapy</td>
</tr>
<tr>
<td>22</td>
<td>SAHC, Murarai</td>
<td>Mouuddin SK Dumurgram, Rampurhat</td>
<td>712</td>
<td>14.06.12</td>
<td>ND HF-1, 2 Years</td>
<td>Club shaped and cauliflower like warts (2-5 cm) on lumbar region, thigh and axilla, n&gt;20</td>
<td>5 months</td>
<td>Moderate, +++, Inj. Anthiomaine</td>
</tr>
<tr>
<td>23</td>
<td>SAHC, Murarai</td>
<td>Furba Seikh, Murare, Rampurhat</td>
<td>744</td>
<td>17.06.12</td>
<td>CBJ Heifer-1, 2 years</td>
<td>Cauliflower like warts (3-5 cm) on head, neck and thorax, n&gt;20</td>
<td>5 months</td>
<td>Moderate, +++, Thuja orally</td>
</tr>
<tr>
<td>24</td>
<td>SAHC, Murarai</td>
<td>Baidyanath Mondal, GopalPur, Rampurhat</td>
<td>766</td>
<td>19.06.2012</td>
<td>CBJ Heifer-1, 2 years</td>
<td>Whole body papillomatosis, n&gt;100</td>
<td>5 months</td>
<td>Severe, +++, Autohemotherapy</td>
</tr>
<tr>
<td>25</td>
<td>SAHC, Murarai</td>
<td>AyaSeikh Bhadeswar</td>
<td>3927</td>
<td>13.03.12</td>
<td>ND BK-1, 3 Years</td>
<td>Small nodular and cauliflower like warts, n&gt;20</td>
<td>5 months</td>
<td>Moderate, +++, Inj. Anthiomaine</td>
</tr>
<tr>
<td>26</td>
<td>SAHC, Murarai</td>
<td>Hasena Bibi Murare Gram</td>
<td>4067</td>
<td>27.03.12</td>
<td>CBJ Cow-1, 3 Years</td>
<td>Extensive cauliflower like warts (2-5 cm) disseminated all over the body, n&gt;50</td>
<td>5 months</td>
<td>Severe, +++, Autohemotherapy</td>
</tr>
<tr>
<td>27</td>
<td>BAHC, Jamboni</td>
<td>Nemai Hunda Jamboni</td>
<td>03</td>
<td>01.04.11</td>
<td>CBJ Cow-1, 3 Years</td>
<td>Diffuse pattern of CCWt infection, on right abdomen and peri-renal region, n&gt;20</td>
<td>5 months</td>
<td>Moderate, +++, Inj. Anthiomaine</td>
</tr>
<tr>
<td>28</td>
<td>BAHC, Jamboni</td>
<td>Ujjal Bagdi</td>
<td>168</td>
<td>26.04.11</td>
<td>CBJ Cow-1, 3 Years</td>
<td>Blackish warts with serrated ends on head, neck and</td>
<td>5 months</td>
<td>Moderate, +++, Inj.</td>
</tr>
<tr>
<td>No.</td>
<td>Location/Lab</td>
<td>Animal</td>
<td>Date</td>
<td>Age</td>
<td>Presentation</td>
<td>Duration</td>
<td>Grade</td>
<td>Treatment</td>
</tr>
<tr>
<td>-----</td>
<td>--------------</td>
<td>--------</td>
<td>------</td>
<td>-----</td>
<td>--------------</td>
<td>----------</td>
<td>-------</td>
<td>-----------</td>
</tr>
<tr>
<td>29</td>
<td>BAHC, Jamboni</td>
<td>SK Bilu Beutecha</td>
<td>219</td>
<td>02.05.11</td>
<td>ND BK-1, 4 Years</td>
<td>6 months</td>
<td>Mild</td>
<td>+</td>
</tr>
<tr>
<td>30</td>
<td>BAHC, Jamboni</td>
<td>Osman SK Saluka</td>
<td>253</td>
<td>03.05.11</td>
<td>CBJ Cow-1, 3 Years</td>
<td>8 Months</td>
<td>Moderate</td>
<td>+++</td>
</tr>
<tr>
<td>31</td>
<td>BAHC, Jamboni</td>
<td>Niren Sah Raghunathpur</td>
<td>1410</td>
<td>04.05.11</td>
<td>Gir FC-1, 13 Months</td>
<td>4 Months</td>
<td>Severe</td>
<td>++++</td>
</tr>
<tr>
<td>32</td>
<td>BAHC, Jamboni</td>
<td>Khetab SK Tentulia</td>
<td>1410</td>
<td>28.11.11</td>
<td>Gir MC-1, 13 Months</td>
<td>6 months</td>
<td>Moderate</td>
<td>+++</td>
</tr>
</tbody>
</table>
Table-36: Breed, age group and sex wise synopsis of cutaneous wart (CWT) and teat papilloma (TP) in cattle and buffalo recorded in Veterinary clinics in the District of Birbhum

<table>
<thead>
<tr>
<th>Breeds affected</th>
<th>Total No. of wart cases</th>
<th>Sex</th>
<th>Age group</th>
<th>No of CWT cases</th>
<th>No of TP cases</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Calf hood</td>
<td>Sub-adult</td>
<td>Adult</td>
</tr>
<tr>
<td>Indigenous and non-descript cattle</td>
<td>18</td>
<td>F-10</td>
<td>3</td>
<td>5</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>M-8</td>
<td>3</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>Cross breed  cattle (CBJ)</td>
<td>13</td>
<td>F-11</td>
<td>1</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td></td>
<td>M-2</td>
<td>1</td>
<td>1</td>
<td>-</td>
</tr>
<tr>
<td>Pure exotic  cattle</td>
<td>-</td>
<td>F</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td>M</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Cross breed  cattle (HLX)</td>
<td>-</td>
<td>F</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td>M</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Buffalo</td>
<td>1</td>
<td>F</td>
<td>-</td>
<td>-</td>
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<td></td>
<td></td>
<td>M-1</td>
<td>-</td>
<td>-</td>
<td>1</td>
</tr>
<tr>
<td>Grand Total</td>
<td>32</td>
<td>F-21</td>
<td>8</td>
<td>12</td>
<td>12</td>
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</table>
Table -37: Institutional survey on the recorded incidence of bovine papillomatosis in Burdwan District, West Bengal

<table>
<thead>
<tr>
<th>Sl No</th>
<th>Name of the centre</th>
<th>Name of the farmer</th>
<th>O.P. No</th>
<th>Date</th>
<th>Category of animal</th>
<th>Gross pathological observations</th>
<th>Duration of infection</th>
<th>Remarks on severity of affections &amp; treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>BAHC, Salanpur</td>
<td>Abdul Alim Salanpur</td>
<td>324</td>
<td>06.07.2011</td>
<td>ND BK-1, 3 years</td>
<td>Big size (6cm) cauliflower like single wart with horny projections</td>
<td>4 Months</td>
<td>+, Mild, Surgical excision</td>
</tr>
<tr>
<td>2</td>
<td>BAHC, Salanpur</td>
<td>Mollah Giasuddin,</td>
<td>768</td>
<td>08.09.2011</td>
<td>CBJ HF-1, 2 years</td>
<td>Single solitary cauliflower like growth (5cm), persistent type</td>
<td>Six months</td>
<td>Mild, +, Surgical extirpation</td>
</tr>
<tr>
<td>3</td>
<td>BAHC, Salanpur</td>
<td>SK Momijul Hak,</td>
<td>804</td>
<td>22.12.2011</td>
<td>CBJ Cow-1, 3 years</td>
<td>Multiple, sessile, grey-white, spherical warts on linea-ulba, n=25</td>
<td>5 Months</td>
<td>++++, Moderate, Inj. Anthiomaline</td>
</tr>
<tr>
<td>4</td>
<td>BAHC, Jamalpur-1 Block</td>
<td>Sunil Karmakar, Jamalpur</td>
<td>1669</td>
<td>19.05.2012</td>
<td>CBJ MC-1, 10 Months</td>
<td>Multiple warts as if bunch of grapes on , n&gt;20</td>
<td>4 Months</td>
<td>++++, Moderate, Inj. Anthiomaline</td>
</tr>
<tr>
<td>5</td>
<td>BAHC, Jamalpur-1 Block</td>
<td>Sk. Goffar Ali Jamalpur-1, Bardhaman</td>
<td>1672</td>
<td>19.05.2012</td>
<td>ND Bull-1, 2.5 years</td>
<td>Multiple pea shaped white grey warts , distributed as scattered lesions all throughout the body except the limbs, n&gt;50</td>
<td>7 Months</td>
<td>++++, Severe, Thuja orally and autohemotherapy</td>
</tr>
<tr>
<td>6</td>
<td>BAHC, Bhatar Block, at Balgona</td>
<td>Pravat Pal, Bhatukul Bhatar Block</td>
<td>5689</td>
<td>20.01.2012</td>
<td>CBJ Cow-1, 3 years</td>
<td>Small cauliflower like warts on facial region and neck, n&gt;30</td>
<td>Six months</td>
<td>++++, Moderate, Autohemotherapy</td>
</tr>
<tr>
<td>7</td>
<td>BAHC, Bhatar Block, at Balgona</td>
<td>Swarash Malik, Srikortur</td>
<td>5871</td>
<td>20.01.2012</td>
<td>CBJ Cow-1, 5 years</td>
<td>Rice grain type warts on all four teats, n=10</td>
<td>5 Months</td>
<td>+, Moderate Thuja orally</td>
</tr>
<tr>
<td>8</td>
<td>BAHC, Bhatar Block, at Balgona</td>
<td>Sk Niamat, Patna</td>
<td>5962</td>
<td>30.01.2012</td>
<td>CBJ Cow-1, 3 years</td>
<td>Multiple, sessile, grey-white, spherical warts on linea-ulba, n&gt;20</td>
<td>5 Months</td>
<td>++++, Moderate, Inj. Anthiomaline</td>
</tr>
<tr>
<td>9</td>
<td>BAHC, Bhatar Block, at Balgona</td>
<td>Nazrul Islam, Patna</td>
<td>6005:</td>
<td>31.01.2012</td>
<td>ND BK-1, 4 Years</td>
<td>Multiple cauliflower like warts on hind limbs and perineum, n&gt;15</td>
<td>8 Months</td>
<td>++++, Moderate, Thuja orally</td>
</tr>
<tr>
<td>10</td>
<td>BAHC, Bhatar Block, at Balgona</td>
<td>Sanat Majhi, Ramchandrapur</td>
<td>6475/18</td>
<td>27.02.2012</td>
<td>MB BK-1,5 Years</td>
<td>Single solitary cauliflower like growth, persistent type</td>
<td>5 Months</td>
<td>+, Mild, Surgical correction</td>
</tr>
<tr>
<td>11</td>
<td>BAHC, Bhatar Block, at Balgona</td>
<td>Bipattaran Dhara, Balgona</td>
<td>6727/1</td>
<td>15.03.2012</td>
<td>ND MC-1,10 Months</td>
<td>Multi centric pedunculated, cauliflower like growths on hind limbs and ventral abdomen, n&gt;20</td>
<td>4 Months</td>
<td>++++, Moderate, Autohemotherapy and orally Thuja</td>
</tr>
<tr>
<td>12</td>
<td>BAHC, Bhatar Block, at Balgona</td>
<td>Zakir Sk, Balgana</td>
<td>198/5</td>
<td>26.04.2012</td>
<td>ND HF-1, 2 Years</td>
<td>Multiple, sessile, grey-white, spherical warts on linea-ulba, n&gt;20</td>
<td>5 Months</td>
<td>++++, Moderate, Inj. Ivermectin, big ones by surgical excision</td>
</tr>
<tr>
<td>13</td>
<td>BAHC, Bhatar Block, at Balgona</td>
<td>Sk Giasuddin, Patna</td>
<td>443</td>
<td>05.05.2012</td>
<td>ND Cow-1, 3 years</td>
<td>Small, scattered rice grain type warts on all four teats(TP), n=12</td>
<td>5 Months</td>
<td>++++, Moderate, Autohemotherapy and orally Thuja</td>
</tr>
<tr>
<td>No.</td>
<td>NAHC, Location, Block, at</td>
<td>Cattle</td>
<td>Date</td>
<td>Body Part</td>
<td>Description</td>
<td>Treatment</td>
<td>Comments</td>
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<td>14</td>
<td>BAHC, Bhatar Block, at Balguna</td>
<td>Golog Kibria, Tulsiangla</td>
<td>954</td>
<td>18.06.2012</td>
<td>ND MC-1, 10 Months</td>
<td>Small, scattered, noddular warts on face, neck and back, n&gt;20</td>
<td>5 Months</td>
<td>++++, Moderate, Autohemotherapy</td>
</tr>
<tr>
<td>15</td>
<td>BAHC, Bhatar Block, at Balguna</td>
<td>Mujibur Mollah, Balguna</td>
<td>1475/65</td>
<td>17.07.2012</td>
<td>ND Cow-1, 4 years</td>
<td>Multi centric, pedunculated, cauliflower like growths on hind quarters and peri anal region, n&gt;30</td>
<td>4 Months</td>
<td>++++, Moderate, Inj. Ivermectin, big ones by surgical excision</td>
</tr>
<tr>
<td>16</td>
<td>BAHC, Aousgram-II, at Amrargarh</td>
<td>Rabi Bagdi, Amrargarh</td>
<td>22.02.2012</td>
<td>CBJ Cow-1, 4 years</td>
<td>Dome shaped warts with undulating surface on head, neck and fore limbs, n&gt;20</td>
<td>4 Months</td>
<td>++++, Moderate, Autohemotherapy</td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>BAHC, Aousgram-II, at Amrargarh</td>
<td>Subol Mondal, Amrargarh</td>
<td>24.05.2012</td>
<td>CBJ HF-1, 2.5 Years</td>
<td>Exophytic warty growths, blackish in colour with serrated end on fore limbs and barrel, n=20</td>
<td>5 Months</td>
<td>++++, Moderate, Inj. Anthiomaline</td>
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</tr>
<tr>
<td>18</td>
<td>ABAHC, Panchanantala, Katwa-1</td>
<td>Pradip Halder, Mustafapur</td>
<td>955</td>
<td>9.6.2012</td>
<td>ND cow-1, 4 Years</td>
<td>Cauliflower like growths on hip region and lower abdomen, n&gt;30</td>
<td>5 Months</td>
<td>++++, Moderate, Inj. Anthiomaline</td>
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<tr>
<td>19</td>
<td>ABAHC, Panchanantala, Katwa-1</td>
<td>Subol Mondal, Amrargarh</td>
<td>975</td>
<td>11.6.2012</td>
<td>ND BK-1(sub adult)</td>
<td>Button like elevated lesions on neck an thorax, n&gt;20</td>
<td>5 Months</td>
<td>++++, Moderate, Inj. Ivermectin</td>
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<tr>
<td>20</td>
<td>ABAHC, Panchanantala, Katwa-1</td>
<td>Swapan Choudhury, Kharagpur</td>
<td>1136</td>
<td>18.6.2012</td>
<td>CBJ HF-1, 2.5 Years</td>
<td>Dome shaped growths with rough surface on abdomen and hind limbs, n&gt;30</td>
<td>4 Months</td>
<td>++++, Moderate, Inj. Anthiomaline</td>
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<tr>
<td>21</td>
<td>ABAHC, Panchanantala, Katwa-1</td>
<td>Rashid Mallick, Bandhuaura</td>
<td>1911</td>
<td>4.7.2012</td>
<td>CB BK-1, 3 Years</td>
<td>Exophytic elevated warty growths, n=13</td>
<td>4 Months</td>
<td>++++, Moderate, Inj. Anthiomaline</td>
</tr>
<tr>
<td>22</td>
<td>ABAHC, Panchanantala, Katwa-1</td>
<td>Utpal Ghosh, Ganfulia</td>
<td>2081</td>
<td>11.7.2012</td>
<td>ND BK-1, 4 Years</td>
<td>Hard, horny, papillomatous solid out growths on head, neck and thorax, n=10</td>
<td>7 Months</td>
<td>++++, Moderate, Inj. Anthiomaline</td>
</tr>
<tr>
<td>23</td>
<td>ABAHC, Panchanantala, Katwa-1</td>
<td>Prakash Ghosh, Sudhprasad</td>
<td>3172</td>
<td>12.9.2012</td>
<td>MB bull-1, 3 years</td>
<td>Hard, horny and typically pedunculated warts on neck and chest, n=4</td>
<td>5 Months</td>
<td>+, Mild, Surgical cure</td>
</tr>
<tr>
<td>24</td>
<td>BAHC, Katwa-1, at Srikhanda</td>
<td>Sadhan Dey, Srikhanda</td>
<td>1181</td>
<td>7.08.2010</td>
<td>Murrah she buffalo-1, 4 years</td>
<td>Flat, irregular, sessile type warts, n=3, (3-5 cm in diameter) with undulating top surface on ventral abdomen and paragenital region</td>
<td>4 Months</td>
<td>+, Mild, Thuja orally</td>
</tr>
<tr>
<td>25</td>
<td>BAHC, Katwa-1, at Srikhanda</td>
<td>Suraj SK, Srikhanda</td>
<td>3353</td>
<td>24.02.2011</td>
<td>HIX cow-1, 4 years</td>
<td>Small, sessile, rice grain type warts affecting all four teats (n=10)</td>
<td>4 Months</td>
<td>++++, Moderate, Thuja orally</td>
</tr>
<tr>
<td>26</td>
<td>BAHC, Katwa-1, at Srikhanda</td>
<td>Bablu Mondal, Koshigram</td>
<td>3844</td>
<td>21.03.2011</td>
<td>CBJ cow-1, 3 years</td>
<td>Unsightly rough, lobate or fungiform harsh warts (n=10) seen on hind limbs and axilla</td>
<td>4 Months</td>
<td>++++, Moderate, Inj. Anthiomaline</td>
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<tr>
<td>27</td>
<td>BAHC, Katwa-1, at Srikhanda</td>
<td>Rohit Majhi, Srikhanda</td>
<td>166</td>
<td>11.04.2012</td>
<td>Gir cow-1, 3 years</td>
<td>Hard, horny, pedunculated warts (n=12) on brisket, neck and thorax</td>
<td>6 Months</td>
<td>++++, Moderate, Inj. Anthiomaline</td>
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<tr>
<td>28</td>
<td>BAHC, Katwa-1, at Srikhanda</td>
<td>Bhuddadeb Ghosh, Debakundu</td>
<td>220</td>
<td>13.04.2012</td>
<td>HIX cow-1, 4 years</td>
<td>Small, round and smooth surfaced dome shaped warts (n=8) on hind teats</td>
<td>4 Months</td>
<td>+, Mild, Thuja orally</td>
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<td>29</td>
<td>BAHC, Katwa-1, at Srikhanda</td>
<td>Suchand Ghosh, Debakundu</td>
<td>328</td>
<td>23.04.2012</td>
<td>ND she buffalo-1, 4 years</td>
<td>Big sized (8 cm in diameter) cauliflower like paragenital wart n=1</td>
<td>4 Months</td>
<td>+, Mild, Surgical excision</td>
</tr>
<tr>
<td>30</td>
<td>BAHC, Katwa-1, at Srikhanda</td>
<td>Bharat Mondal, Bagtona</td>
<td>542</td>
<td>25.05.2012</td>
<td>CBJ cow-1, 4 years</td>
<td>Rough, elongated, filiform teat warts, n&gt;15, on all four teats</td>
<td>4 Months</td>
<td>++++, Moderate, Thuja orally</td>
</tr>
<tr>
<td>Case No.</td>
<td>Location/Client</td>
<td>Remarks</td>
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</tr>
<tr>
<td>31</td>
<td>BAHC, Katwa-1, at Srikhanda</td>
<td>ND she buffalo-1, 5 years Roughly irregular, cauliflower like warts, n=2 at the perineum</td>
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<tr>
<td>32</td>
<td>BAHC, Mongolkote</td>
<td>Tapan Gorai, Prodimpur</td>
<td>HLX Cow-1, 3 Years Warts (n=10) on back (trunk), posterior lumber and on tail base</td>
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<tr>
<td>33</td>
<td>BAHC, Mongolkote</td>
<td>Nausad Ali, Barabazar</td>
<td>Gir HF-1, 2 Years Distribution of papillomatous lesions (warts, n=12) on head, neck and around the eyes</td>
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<tr>
<td>34</td>
<td>BAHC, Mongolkote</td>
<td>Shyam Chatterjee</td>
<td>ND HF-1, 2 Years Warts affection with bilateral fore limbs involvement, n&gt;20</td>
<td></td>
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<tr>
<td>35</td>
<td>BAHC, Mongolkote</td>
<td>Ganesh Hembram, Majipara</td>
<td>ND MC-1, 12 months Eye warts affecting eyelids and peri orbital region, n=8</td>
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<tr>
<td>36</td>
<td>BAHC, Mongolkote</td>
<td>Inamul SK, Padimpur</td>
<td>Gir HF-1, 2.5 years Warts with various stages of development disseminated on face, neck and fore limbs, n&gt;20</td>
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<tr>
<td>37</td>
<td>BAHC, Mongolkote</td>
<td>SK Sahidul, Mongalkote</td>
<td>Flat, circular warts on the ventral abdomen with eroded top surface, n=5</td>
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<td>38</td>
<td>BAHC, Mongolkote</td>
<td>Moelim Molla, Barabazar</td>
<td>ND BK-1, 4 years Extensive papillomatous lesions (3mm to 20 mm) seen on head, neck, thorax and all four limbs, n&gt;50</td>
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<tr>
<td>40</td>
<td>BAHC, Mongolkote</td>
<td>Babry Alam, Mongalkote</td>
<td>ND Buffalo Bk-1, 5 years Typical, hard, horny, squat type big sized(8cm in diameter) solitary wart on the neck region</td>
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<tr>
<td>41</td>
<td>BAHC, Mongolkote</td>
<td>SK Year Mahammad, Deulia</td>
<td>Gircow-1, 3 years Multiple teat papillomas (n=9) involving all four teats</td>
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<tr>
<td>42</td>
<td>BAHC, Mongolkote</td>
<td>SK Jamirul Hak, Bonpara</td>
<td>CBJ HF-1, 2 years Extensive papillomatous lesions (3mm to 20 mm) seen on head, neck, thorax and all four limbs, n&gt;50</td>
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<tr>
<td>43</td>
<td>BAHC, Mongolkote</td>
<td>Bulu Munshi, Nowapara</td>
<td>Gircow-1, 3 years Warts in clustered form affecting the right axilla, n=8</td>
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<tr>
<td>44</td>
<td>BAHC, Mongolkote</td>
<td>SK Lutfar Rahaman, Kalanpur</td>
<td>CBJ cow-1, 3 years Paragenital warts along the vulval lips, n=6</td>
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<td>45</td>
<td>BAHC, Purbasthali-1</td>
<td>Jillal Mondal, Gokona</td>
<td>Gircow-1, 4 years Squat type warts on dewlap, brisket and chest, n=12</td>
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<tr>
<td>46</td>
<td>BAHC, Purbasthali-1</td>
<td>Ashok Satra, Karail</td>
<td>CBJ HF-1, 2 years Penodulated warts on nostrils, mouth, eyelids and head, n&gt;20</td>
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</table>
| 47 | BAHC, Purbasthali-1 | Ranjit Debnath, | CBJ HF-1, 2.5 years Multiple sessile type warts on fore limbs, neck,

Results | 187
<table>
<thead>
<tr>
<th>#</th>
<th>Location</th>
<th>Name of the Animal</th>
<th>Identification No.</th>
<th>Date of Birth</th>
<th>Age on Test</th>
<th>Site of Lesions</th>
<th>Lesions Description</th>
<th>Duration</th>
<th>Treatment Method</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>48</td>
<td>BAHC, Purbasthali-1</td>
<td>Raju Pal, Bibirhat</td>
<td>1652</td>
<td>18.07.2012</td>
<td>Gir FC-1, 13 months</td>
<td>Multiple, hard, typical pedunculated keratinized horny warts of varying size and shape on belly, head, neck, back and hind limbs, n&gt;30</td>
<td>5 Months</td>
<td>++++, Severe, Autohemotherapy</td>
<td></td>
<td></td>
</tr>
<tr>
<td>49</td>
<td>BAHC, Purbasthali-1</td>
<td>Tapan Ghosh, Srirampur</td>
<td>2232</td>
<td>18.08.2012</td>
<td>Gir HF-1, 2 years</td>
<td>Hard, horny cauliflower like growths entirely covering lower hind legs, n&gt;50</td>
<td>6 Months</td>
<td>++++, Severe, Anthiomalone parenterally</td>
<td></td>
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<tr>
<td>50</td>
<td>BAHC, Purbasthali-1</td>
<td>Haribol Debnath, Srirampur</td>
<td>2645</td>
<td>11.09.2012</td>
<td>Gir MC-1, 11 months</td>
<td>Multiple nodular warts on hind limbs, flank and post scrotal region, n&gt;30</td>
<td>3 Months</td>
<td>++++, Moderate, Autohemotherapy</td>
<td></td>
<td></td>
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<tr>
<td>51</td>
<td>BAHC, Purbasthali-1</td>
<td>Joydeb Dey, Hamatpur</td>
<td>3050</td>
<td>04.10.2012</td>
<td>CBJ FC-1, 12 months</td>
<td>Small, cauliflower like warts on neck, dewlap, brisket and above the shoulder joint, n&gt;20</td>
<td>5 Months</td>
<td>++++, Moderate, Ivermectin by S/C route</td>
<td></td>
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<tr>
<td>52</td>
<td>BAHC, Purbasthali-1</td>
<td>Shyamal Dey, Srirampur</td>
<td>4097</td>
<td>10.12.2012</td>
<td>CBJ cow-1, 5 years</td>
<td>Small, seed like smooth surfaced warts on all four teats, n&gt;20</td>
<td>6 Months</td>
<td>++++, Moderate, Autohemotherapy</td>
<td></td>
<td></td>
</tr>
<tr>
<td>53</td>
<td>ABAHC, Kamarpara, Bhatar Block</td>
<td>N. Besra, Majherdanga</td>
<td>1114</td>
<td>21.06.2011</td>
<td>Gir BK-1, 4 Years</td>
<td>Squat type warts below the baseline of the abdomen and dome shaped warts at base of the teats, n&gt;12</td>
<td>5 Months</td>
<td>++++, Moderate, Ivermectin by S/C route</td>
<td></td>
<td></td>
</tr>
<tr>
<td>54</td>
<td>ABAHC, Kamarpara, Bhatar Block</td>
<td>S. Hati, Kamarpara</td>
<td>1953</td>
<td>17.8.2011</td>
<td>Gir cow-1, 3 Years</td>
<td>Rice grain type warts on teats, n&gt;15</td>
<td>6 Months</td>
<td>++++, Moderate, Thuja orally</td>
<td></td>
<td></td>
</tr>
<tr>
<td>55</td>
<td>ABAHC, Kamarpara, Bhatar Block</td>
<td>SK. Modibor, Haripati</td>
<td>1082</td>
<td>30.05.2012</td>
<td>CBJ cow-1, 3 years</td>
<td>Cauliflower like warts around the eyes, neck and left fore limb, n&gt;30</td>
<td>3 Months</td>
<td>++++, Moderate, Inj. Anthiomalone</td>
<td></td>
<td></td>
</tr>
<tr>
<td>56</td>
<td>ABAHC, Kamarpara, Bhatar Block</td>
<td>G. Baragya, Bamunia</td>
<td>105</td>
<td>9.4.2012</td>
<td>Gir HF-1, 2 Years</td>
<td>Lesions around the eyes, neck and back, n&gt;15</td>
<td>5 Months</td>
<td>++++, Moderate, Thuja orally</td>
<td></td>
<td></td>
</tr>
<tr>
<td>57</td>
<td>ABAHC, Kamarpara, Bhatar Block</td>
<td>B. K. Ghosh, Bamunia</td>
<td>2022</td>
<td>18.07.2012</td>
<td>CBJ cow-1, 4 years</td>
<td>Small dome shaped warts on teats and udder, n&gt;10</td>
<td>6 Months</td>
<td>++++, Moderate, Thuja orally</td>
<td></td>
<td></td>
</tr>
<tr>
<td>58</td>
<td>SAHC, Kaichor</td>
<td>Radha Gopal Diger, Natungram</td>
<td>1978</td>
<td>26.03.2010</td>
<td>Gir Cow-1, 4 Years</td>
<td>Cauliflower like warts at the periaural region, ventral neck and interscapular region, n&gt;30</td>
<td>5 Months</td>
<td>++++, Moderate, Inj. Anthiomalone</td>
<td></td>
<td></td>
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<tr>
<td>59</td>
<td>SAHC, Kaichor</td>
<td>Abdul Rob Sk, Kalsona</td>
<td>157</td>
<td>19.05.2010</td>
<td>Gir HF-1, 2 Years</td>
<td>Califlower like warts on muzzles, n&gt;15</td>
<td>6 Months</td>
<td>++++, Moderate, Inj. Anthiomalone</td>
<td></td>
<td></td>
</tr>
<tr>
<td>60</td>
<td>SAHC, Kaichor</td>
<td>Jalm Sk, Kaichor</td>
<td>713</td>
<td>17.09.2010</td>
<td>ND MC-1, 11 Months</td>
<td>Sessile type warts on ears, neck and fore limbs, n&gt;20</td>
<td>6 Months</td>
<td>++++, Moderate, Thuja orally</td>
<td></td>
<td></td>
</tr>
<tr>
<td>61</td>
<td>SAHC, Kaichor</td>
<td>Royhan Sk, Shimulia</td>
<td>1505</td>
<td>27.01.2011</td>
<td>ND BK-1, 4 Years</td>
<td>Cauliflower like warts on muzzle, neck and brisket, n&gt;20</td>
<td>6 Months</td>
<td>++++, Moderate, Inj. Anthiomalone</td>
<td></td>
<td></td>
</tr>
<tr>
<td>62</td>
<td>SAHC, Kaichor</td>
<td>Pinku Jos, Kaichor</td>
<td>1811</td>
<td>10.03.2011</td>
<td>Gir FC-1, 14 Months</td>
<td>Small filliform warts on teats only, n&gt;10</td>
<td>5 Months</td>
<td>++++, Moderate, Thuja orally</td>
<td></td>
<td></td>
</tr>
<tr>
<td>63</td>
<td>SAHC, Kaichor</td>
<td>Uttam Das, Kaichor</td>
<td>1920</td>
<td>23.03.2011</td>
<td>Gir Cow-1, 4 Years</td>
<td>Small filliform warts on teats only, n&gt;10</td>
<td>5 Months</td>
<td>++++, Moderate, Thuja orally</td>
<td></td>
<td></td>
</tr>
<tr>
<td>64</td>
<td>SAHC, Kaichor</td>
<td>Ashoke Bag, Kanaiadanga</td>
<td>625</td>
<td>29.06.2011</td>
<td>CBJ HF-1, 3 Years</td>
<td>Multiple, hard, typical pedunculated keratinized horny warts of varying size and shape on belly, head, neck, back and hind limbs, n&gt;30</td>
<td>5 Months</td>
<td>++++, Moderate, Anthiomalone</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No.</td>
<td>AHCI</td>
<td>Location/Individual</td>
<td>SC</td>
<td>Date</td>
<td>Animal Type</td>
<td>Lesion Description</td>
<td>Start Treatment</td>
<td>Duration</td>
<td>Description</td>
<td></td>
</tr>
<tr>
<td>-----</td>
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<tr>
<td>65</td>
<td>SAHC, Kaichor</td>
<td>Al Hak Sk, Nawpar</td>
<td>1510</td>
<td>13.10.2011</td>
<td>ND BK-1, 5 Years</td>
<td>Pedunculated warts on back and left neck, n&gt;10</td>
<td>6 Months</td>
<td>++++,Moderate,Inj. Ivermectin</td>
<td></td>
<td></td>
</tr>
<tr>
<td>66</td>
<td>SAHC, Kaichor</td>
<td>Probi Roy, kaichor</td>
<td>2615</td>
<td>23.02.2012</td>
<td>CBJ cow-1, 4 years</td>
<td>Rice grain type warts (1-2 cm) on teats only, n&gt;10</td>
<td>3 Months</td>
<td>++++, Moderate, Thuja orally</td>
<td></td>
<td></td>
</tr>
<tr>
<td>67</td>
<td>SAHC, Kaichor</td>
<td>A Paramanik, Sitalgram</td>
<td>378</td>
<td>8.06.2012</td>
<td>HLX Cow-1, 4 Years</td>
<td>Small (2-3 cm) dome shaped warts on all four teats, n&gt;10</td>
<td>5 Months</td>
<td>++++, Moderate, Thuja orally</td>
<td></td>
<td></td>
</tr>
<tr>
<td>68</td>
<td>SAHC, Kaichor</td>
<td>Prabir Rai, Kaichor</td>
<td>765</td>
<td>2.08.2012</td>
<td>CBJ HF-1, 3 Years</td>
<td>Squat type warts on hind limbs and gluteal region, n&gt;20</td>
<td>6 Months</td>
<td>++++, Moderate, Inj. Anthiomaline</td>
<td></td>
<td></td>
</tr>
<tr>
<td>69</td>
<td>SAHC, Kaichor</td>
<td>Tapan Majhi, Chaitanyapur</td>
<td>1036</td>
<td>7.09.2012</td>
<td>HLX Cow-1, 4 Years</td>
<td>Small nodular and dome shaped warts (1-1.5 cm) on udder and teats, n&gt;10</td>
<td>5 Months</td>
<td>++++, Moderate, Inj. Anthiomaline</td>
<td></td>
<td></td>
</tr>
<tr>
<td>70</td>
<td>BAHC, Jamuria</td>
<td>Rahindranath Chowbey, East Kenda</td>
<td>04(Daily OP)</td>
<td>7.05.2010</td>
<td>RS cow-1, 4 Years</td>
<td>Rice grain type warts (1-2 cm) on teats only, n&gt;10</td>
<td>6 Months</td>
<td>++++, Moderate, Inj. Anthiomaline</td>
<td></td>
<td></td>
</tr>
<tr>
<td>71</td>
<td>BAHC, Jamuria</td>
<td>Rajib Garai, Bahadurpur</td>
<td>01(Daily OP)</td>
<td>10.05.2010</td>
<td>Gir cow-1, 4 Years</td>
<td>Small dome shaped warts on all four teats, n&gt;10</td>
<td>3 Months</td>
<td>++++,Moderate,Inj. Ivermectin</td>
<td></td>
<td></td>
</tr>
<tr>
<td>72</td>
<td>BAHC, Jamuria</td>
<td>Apurba Bauri, Dhasal</td>
<td>01(Daily OP)</td>
<td>17.06.2010</td>
<td>ND BK-1, 3 Years</td>
<td>Small (1-2 cm in diameter),nodular lesions on scrotal sac, n&gt;20</td>
<td>5 Months</td>
<td>++++, Moderate, Thuja orally</td>
<td></td>
<td></td>
</tr>
<tr>
<td>73</td>
<td>BAHC, Jamuria</td>
<td>Nabin Ruhidias, Bahadurpur</td>
<td>03(Daily OP)</td>
<td>17.06.2010</td>
<td>Gir HF-1, 3 Years</td>
<td>Cauliflower like warts (3-4 cm) on head, neck and thorax, n&gt;15</td>
<td>6 Months</td>
<td>++++, Moderate, Thuja orally</td>
<td></td>
<td></td>
</tr>
<tr>
<td>74</td>
<td>BAHC, Jamuria</td>
<td>Saraswati Garai, Chinchuria</td>
<td>02(Daily OP)</td>
<td>30.06.2010</td>
<td>HLX Cow-1, 4 Years</td>
<td>Cauliflower like warts (2-3 cm) without pedicles on axilla and udder, n&gt;10</td>
<td>5 Months</td>
<td>++++, Moderate, Inj. Anthiomaline</td>
<td></td>
<td></td>
</tr>
<tr>
<td>75</td>
<td>BAHC, Jamuria</td>
<td>Mahesh Mondal, Bahadurpur</td>
<td>01(Daily OP)</td>
<td>15.07.2010</td>
<td>Gir cow-1, 4 Years</td>
<td>Small nodular and dome shaped warts (1-1.5 cm) on udder and teats, n&gt;10</td>
<td>6 Months</td>
<td>++++, Moderate, Inj. Anthiomaline</td>
<td></td>
<td></td>
</tr>
<tr>
<td>76</td>
<td>BAHC, Jamuria</td>
<td>Kripasindhu Pal, Hijalgona</td>
<td>03(Daily OP)</td>
<td>23.07.2010</td>
<td>CBJ Cow-1, 3 Years</td>
<td>Rice grain type warts (1-2 cm) on teats only, n&gt;10</td>
<td>6 Months</td>
<td>++++, Moderate, Inj. Anthiomaline</td>
<td></td>
<td></td>
</tr>
<tr>
<td>77</td>
<td>BAHC, Jamuria</td>
<td>Ramlal Baskey, Krishnanagar</td>
<td>05(Daily OP)</td>
<td>27.07.2010</td>
<td>ND Bk-1, 3 Years</td>
<td>Multiple CWTs (3-5 cm) on head, neck, back and muzzle regions, n&gt;15</td>
<td>3 Months</td>
<td>++++,Moderate,Inj. Ivermectin</td>
<td></td>
<td></td>
</tr>
<tr>
<td>78</td>
<td>BAHC, Jamuria</td>
<td>Sitaram Ghosh, Chakdola</td>
<td>05(Daily OP)</td>
<td>29.08.2011</td>
<td>ND Bk-1, 3 Years</td>
<td>Multiple (n&gt;20) sessile solid outgrowths on fore limbs and neck, 2-4 cm in diameter</td>
<td>5 Months</td>
<td>++++, Moderate, Thuja orally</td>
<td></td>
<td></td>
</tr>
<tr>
<td>79</td>
<td>BAHC, Jamuria</td>
<td>Kartik Rana, Dahaka</td>
<td>03(Daily OP)</td>
<td>01.11.2011</td>
<td>CBJ Cow-1, 3 Years</td>
<td>Circular to elongated, rough, horny warts (2-3 cm) on both sides of the neck, around the eyes and face, n&gt;30</td>
<td>6 Months</td>
<td>++++, Moderate, Thuja orally</td>
<td></td>
<td></td>
</tr>
<tr>
<td>80</td>
<td>BAHC, Jamuria</td>
<td>Tarasankar Chatterjee, Ikrah</td>
<td>02(Daily OP)</td>
<td>28.11.2011</td>
<td>CBJ Cow-1, 3 Years</td>
<td>Multiple (n&gt;20) sessile type warts (3-4 cm) projecting like towel surface on the thigh region bilaterally, around the vulva and anus</td>
<td>5 Months</td>
<td>++++, Moderate, Autohemotherapy</td>
<td></td>
<td></td>
</tr>
<tr>
<td>81</td>
<td>BAHC, Jamuria</td>
<td>Jaichand Balmiki, Chakdola</td>
<td>03(Daily OP)</td>
<td>15.12.2011</td>
<td>ND Bk-1, 3 Years</td>
<td>Extensive cauliflower like warts (3-5 cm) on the chest, abdomen and medial sides of the thighs and axillary region, n&gt;50 lesions</td>
<td>6 Months</td>
<td>Severe(++++), Autohemotherapy and oral Levamisol therapy</td>
<td></td>
<td></td>
</tr>
<tr>
<td>82</td>
<td>BAHC, Jamuria</td>
<td>Manik Ghosh, Lalbazar</td>
<td>07(Daily OP)</td>
<td>13.02.2012</td>
<td>CBJ Cow-1, 3 Years</td>
<td>Small (1-2 cm) dome shaped warts on all four teats, n&gt;10</td>
<td>6 Months</td>
<td>++++,Moderate,Inj. Ivermectin</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Case No.</td>
<td>Location</td>
<td>Patient Name</td>
<td>Date</td>
<td>Animal Type</td>
<td>Lesion Description</td>
<td>Treatment Duration</td>
<td>Treatment Notes</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>8384</td>
<td>BAHC, Jamuria</td>
<td>Rabi Kora, Jamsole</td>
<td>07(Daily OP) 02.03.2012</td>
<td>Girgrded up cow-1, 4 Years</td>
<td>Rice grain type warts (1-2 cm) on teats only, n&gt;10</td>
<td>3 Months</td>
<td>++++,Moderate, Inj. Ivermectin</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>85</td>
<td>BAHC, Jamuria</td>
<td>Dalu Garai, Chaktulshi</td>
<td>01(Daily OP) 01.06.2012</td>
<td>CBJ Cow-1, 3 Years</td>
<td>Extensive cauliflower like warts( 3-5 cm) on the chest, abdomen and medial sides of the thighs and axillary region, n&gt;50 lesions</td>
<td>6 Months</td>
<td>Severe(++++), Autohemothemia and oral Levamisol therapy</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>88</td>
<td>BAHC, Jamuria</td>
<td>Bablu Badyakar, Old Jamsole</td>
<td>03(Daily OP) 16.07.2012</td>
<td>Gir (grded up cow) -1, 4 Years</td>
<td>Rice grain type warts (1-2 cm) on teats only, n&gt;10</td>
<td>3 Months</td>
<td>++++,Moderate, Inj. Ivermectin</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>86</td>
<td>BAHC, Jamuria</td>
<td>Rabin Mandal, Belbad</td>
<td>02(Daily OP) 07.09.2012</td>
<td>ND HF-1, 2 Years</td>
<td>Extensive cauliflower like warts (3-5 cm) on both sides of the neck, chest, abdomen and medial sides of the thighs, n&gt;50 lesions</td>
<td>5 Months</td>
<td>Severe(++++), Autohemothemia and oral Levamisol therapy</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>87</td>
<td>BAHC, Jamuria</td>
<td>Birendra Kr. Gope, KhasKenda</td>
<td>03(Daily OP) 18.09.2012</td>
<td>HLX Cow-1, 4 Years</td>
<td>Rice grain type warts (1-2 cm) on teats only, n&gt;10</td>
<td>6 Months</td>
<td>++++,Moderate, Inj. Ivermectin</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>88</td>
<td>BAHC, Jamuria</td>
<td>Jiban Patra, Lalbazar</td>
<td>08(Daily OP) 06.11.2012</td>
<td>MB HF-1, 3 Years</td>
<td>Solid pedunculated cauliflower like white CWTs on back, abdomen and perineum, n&gt;20, 4-6 cm in diameter</td>
<td>5 Months</td>
<td>++++,Moderate, Inj. Ivermectin</td>
<td></td>
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</tr>
</tbody>
</table>
Table-38: Breed, age group and sex wise synopsis of cutaneous wart (CWT) and teat papilloma (TP) in cattle and buffalo recorded in veterinary clinics in the District of Burdwan

<table>
<thead>
<tr>
<th>Breeds affected</th>
<th>Total No. of recorded wart cases</th>
<th>Sex</th>
<th>Age group</th>
<th>No of CWT cases</th>
<th>No of TP cases</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Calf hood</td>
<td>Sub-adult</td>
<td>Adult</td>
</tr>
<tr>
<td>Indigenous and non-descript cattle</td>
<td>46</td>
<td>F-26</td>
<td>2</td>
<td>10</td>
<td>14</td>
</tr>
<tr>
<td></td>
<td></td>
<td>M-20</td>
<td>5</td>
<td>4</td>
<td>11</td>
</tr>
<tr>
<td>Cross breed cattle (CBJ)</td>
<td>29</td>
<td>F-27</td>
<td>1</td>
<td>8</td>
<td>18</td>
</tr>
<tr>
<td></td>
<td></td>
<td>M-2</td>
<td>1</td>
<td>-</td>
<td>1</td>
</tr>
<tr>
<td>Purebred exotic cattle</td>
<td>-</td>
<td>F</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td>M</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Cross breed cattle (HLX)</td>
<td>6</td>
<td>F-6</td>
<td>-</td>
<td>-</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td></td>
<td>M</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Buffalo</td>
<td>7</td>
<td>F-4</td>
<td>-</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>M-3</td>
<td>-</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Grand Total</td>
<td>88</td>
<td>F-63</td>
<td>9</td>
<td>24</td>
<td>55</td>
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</tbody>
</table>
Table-39: Institutional survey on the recorded incidence of bovine papillomatosis in Purulia district, West Bengal

<table>
<thead>
<tr>
<th>Sl No</th>
<th>Name of the centre</th>
<th>Name of the farmer</th>
<th>O.P. No</th>
<th>Date</th>
<th>Category of animal</th>
<th>Gross pathological observations</th>
<th>Duration of infection</th>
<th>Remarks on severity of affections &amp; mode of treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>SAHC, Balarampur</td>
<td>Kinu Maji</td>
<td>503</td>
<td>4.9.10</td>
<td>ND BK-1, 4 Years</td>
<td>Flat and round warts (3-6 cm) on dorsal thorax, n&gt;20</td>
<td>6 months</td>
<td>Moderate; +++, Inj. Anthiomaline tried</td>
</tr>
<tr>
<td>2</td>
<td>SAHC, Balarampur</td>
<td>Bharat Gope</td>
<td>525</td>
<td>15.9.10</td>
<td>CBJ Cow-1, 3 Years</td>
<td>Rice grain type teat papilloma (2-3 cm) on udder and teats, n=8</td>
<td>2 months</td>
<td>Mild, +, Thuja orally</td>
</tr>
<tr>
<td>3</td>
<td>SAHC, Balarampur</td>
<td>Sk Mintu</td>
<td>780</td>
<td>6.12.10</td>
<td>ND MC-1, 13 Months</td>
<td>Few flat and round warts (3-5 cm) on chest and neck, n&gt;15</td>
<td>4 months</td>
<td>Moderate, +++; Autohemotherapy carried out</td>
</tr>
<tr>
<td>4</td>
<td>SAHC, Balarampur</td>
<td>Basari Gope</td>
<td>144</td>
<td>16.5.10</td>
<td>ND BK-1, 3.6 Years</td>
<td>Cauliflower like warts (5-6 cm) on neck region, n=6</td>
<td>6 months</td>
<td>Mild, +, Thuja orally</td>
</tr>
<tr>
<td>5</td>
<td>SAHC, Balarampur</td>
<td>Sula Gope</td>
<td>534</td>
<td>18.10.11</td>
<td>ND BK-1, 3 Years</td>
<td>Numerous warts (4-5 cm) on face, neck and body, n&gt;50</td>
<td>4 months</td>
<td>Moderate, +++; Autohemotherapy carried out</td>
</tr>
<tr>
<td>6</td>
<td>SAHC, Balarampur</td>
<td>Asim Majhi</td>
<td>646</td>
<td>28.12.2011</td>
<td>ND BK-1, 4 Years</td>
<td>Medium sized warts (4-5 cm) on face and neck, n=12</td>
<td>4 months</td>
<td>Moderate, +++; Homeopathic remedy</td>
</tr>
<tr>
<td>7</td>
<td>SAHC, Purulia</td>
<td>Ganesh Gope</td>
<td>607</td>
<td>3.5.2011</td>
<td>Gir FC-1, 11 Months</td>
<td>Whole body papillomatosis (3-5 cm) with small cauliflower like warts, n&gt;100</td>
<td>6 months</td>
<td>Severe, +++; Autohemotherapy</td>
</tr>
<tr>
<td>8</td>
<td>SAHC, Purulia</td>
<td>Gouranga Mahato Ramdihi</td>
<td>660</td>
<td>4.5.2011</td>
<td>CBJ HF-1, 2 Years</td>
<td>Warts (3-5 cm) on head and neck, n&gt;20</td>
<td></td>
<td>Moderate, +++; Injectable Antimony preparation</td>
</tr>
<tr>
<td>9</td>
<td>SAHC, Purulia</td>
<td>Ajit Mahato, Pukhuria</td>
<td>1234</td>
<td>1.6.2011</td>
<td>ND BK-1, 4 Years</td>
<td>Solitary wart, big (6 cm in diameter) cauliflower like in appearance</td>
<td>6 months</td>
<td>Mild, +; Surgical excision</td>
</tr>
<tr>
<td>10</td>
<td>SAHC, Purulia</td>
<td>Aditya Sen, Nilkenthidanga</td>
<td>1939</td>
<td>1.7.2011</td>
<td>ND Milchcow-1, 4 Years</td>
<td>Warts on Udder and abdominal wall, n=6</td>
<td>4 months</td>
<td>Mild, +; Thuja orally</td>
</tr>
<tr>
<td>11</td>
<td>SAHC, Purulia</td>
<td>Anando Mahato, Naradhi</td>
<td>3050</td>
<td>5.9.2011</td>
<td>ND BK-1, 4 Years</td>
<td>Big sized wart (8 cm) on shoulder</td>
<td>4 months</td>
<td>Mild, +; Surgical excision</td>
</tr>
<tr>
<td>12</td>
<td>SAHC, Purulia</td>
<td>Gour Ch. Mahato Maguria</td>
<td>4377</td>
<td>17.11.2011</td>
<td>CBJ cow-1, 3.5 Years</td>
<td>Single pedunculated wart (6 cm) on ear base</td>
<td>5 months</td>
<td>Mild, +; Surgical excision</td>
</tr>
<tr>
<td>13</td>
<td>BAHC, Puncha</td>
<td>Hemanga Ray, Baramasia</td>
<td>2646</td>
<td>26.07.2011</td>
<td>ND FC-1, 13 Months</td>
<td>Warts (3-4 cm) on neck and muzzle, n&gt;15</td>
<td>3 months</td>
<td>Moderate, +++; Thuja orally</td>
</tr>
<tr>
<td>14</td>
<td>BAHC, Puncha</td>
<td>Joydev Mahato</td>
<td>2772</td>
<td>16.09.2011</td>
<td>ND MC-1, 12 Months</td>
<td>Warts (3-5 cm) on ear, eyelids, trunk, n&gt;20</td>
<td>5 months</td>
<td>Moderate, +++; Injectable Antimony preparation</td>
</tr>
<tr>
<td>No.</td>
<td>Location</td>
<td>Full Name</td>
<td>Contact</td>
<td>Date</td>
<td>Age</td>
<td>Location</td>
<td>lesion description</td>
<td>Treatment</td>
</tr>
<tr>
<td>-----</td>
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<td>-----</td>
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<tr>
<td>15</td>
<td>BAHC, Pucha</td>
<td>Goutam Garai Puncha</td>
<td>2870</td>
<td>13.10.2011</td>
<td>CBJ HF-1, 3 Years</td>
<td>Medium sized warts (3-5 cm) on face, above the eyes and neck, n&gt;20</td>
<td>5 months</td>
<td>Moderate, ++, Inj. Ivermectin</td>
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<tr>
<td>16</td>
<td>BAHC, Pucha</td>
<td>Dhananjay Mahato, Saragora</td>
<td>2893</td>
<td>19.10.2011</td>
<td>ND BK-1, 4 Years</td>
<td>One big sized wart (6 cm) on back lumber region</td>
<td>5 months</td>
<td>Mild, +, Surgical excision</td>
</tr>
<tr>
<td>17</td>
<td>BAHC, Pucha</td>
<td>Manindra Tudu Karkatia</td>
<td>2897</td>
<td>20.10.2011</td>
<td>CBJ cow-1, 3 Years</td>
<td>One big cauliflower like growth (7 cm) on back</td>
<td>5 months</td>
<td>Mild+, Enucleated on surgical intervention</td>
</tr>
<tr>
<td>18</td>
<td>BAHC, Pucha</td>
<td>Manjula Tudu Karkatia</td>
<td>2899</td>
<td>23.10.2011</td>
<td>ND Cow-1, 4 Years</td>
<td>Diffuse frond type growths (2-3 cm) on teats, n&gt;10</td>
<td>6 months</td>
<td>Mild, Thuja orally</td>
</tr>
<tr>
<td>19</td>
<td>BAHC, Bandwan</td>
<td>Tikaram Mahato Hatiramgora</td>
<td>2426</td>
<td>13.12.2010</td>
<td>ND MC-1, 12 Months</td>
<td>Multiple warts (4-5 cm) on ears, eyelids, neck and trunk, n&gt;30</td>
<td>6 months</td>
<td>Moderate, ++, Injectable Antimony preparation</td>
</tr>
<tr>
<td>20</td>
<td>BAHC, Bandwan</td>
<td>Jotilal Singh Kantagora</td>
<td>2688</td>
<td>31.12.2010</td>
<td>ND BK-1, 5 Years</td>
<td>Medium sized warts (4-5 cm) on neck and shoulder, n&gt;15</td>
<td>6 months</td>
<td>Moderate, +++, Enucleated on surgical intervention</td>
</tr>
<tr>
<td>21</td>
<td>BAHC, Bandwan</td>
<td>Jotilal Singh Kantagora</td>
<td>2688</td>
<td>31.12.2010</td>
<td>ND BK-1, 5 Years</td>
<td>A big sized wart (8 cm) on back</td>
<td>3 months</td>
<td>Mild, Thuja orally</td>
</tr>
<tr>
<td>22</td>
<td>BAHC, Bandwan</td>
<td>Ashok Kr. Mahato Karalikole</td>
<td>157</td>
<td>19.4.2011</td>
<td>CBJ MC-1, 14 Months</td>
<td>Multiple warts (4-5 cm) on neck region and croup, n&gt;20</td>
<td>6 months</td>
<td>Moderate, +++ , Thuja orally</td>
</tr>
<tr>
<td>23</td>
<td>BAHC, Bandwan</td>
<td>Arun Mahato Saira</td>
<td>413</td>
<td>25.5.2011</td>
<td>ND BK-1, 5 Years</td>
<td>Multiple warts on neck region, n&gt;15</td>
<td>6 months</td>
<td>Moderate, +++ , Anthiomalone by IM route</td>
</tr>
<tr>
<td>24</td>
<td>BAHC, Bandwan</td>
<td>Avilasha Mandi Gipididi</td>
<td>826</td>
<td>5.7.2011</td>
<td>ND BK-1, 3 Years</td>
<td>Multiple warts on shoulder and thorax, n&gt;20</td>
<td>6 months</td>
<td>Moderate, ++, Auto hemo therapy</td>
</tr>
<tr>
<td>25</td>
<td>BAHC, Bandwan</td>
<td>Sibram Mitra Bandwan</td>
<td>980</td>
<td>20.7.2011</td>
<td>ND BK-1, 4 Years</td>
<td>Warts on the neck, head and chest, n=7</td>
<td>3 months</td>
<td>Mild, +, surgically extirpated</td>
</tr>
<tr>
<td>26</td>
<td>BAHC Bandwan</td>
<td>Nanigopal Mahato, Nanichitra</td>
<td>2119</td>
<td>22.9.2011</td>
<td>Sub adult ND BK-1, 3 years</td>
<td>Multiple warts on neck and fore limbs, n&gt;20</td>
<td>2 months</td>
<td>Moderate, ++, Auto hemo therapy</td>
</tr>
<tr>
<td>27</td>
<td>ABAHC Gourangdihi Kashipur Block</td>
<td>Pranab Roy Gourangdihi</td>
<td>2397</td>
<td>1.2.2012</td>
<td>ND MC-1, 12 Months</td>
<td>Cauliflower like growths on hind limbs and axilla, n&gt;50</td>
<td>4 months</td>
<td>Severe, +++, Auto hemo therapy and immunomodulation by Levamisole compound</td>
</tr>
<tr>
<td>28</td>
<td>ABAHC Gourangdihi Kashipur Block</td>
<td>Rajesh Baori Badirdhi</td>
<td>361</td>
<td>25.5.2012</td>
<td>CBJ HF-1, 2 Years</td>
<td>Warts (2-5 cm) disseminated on ventral abdomen, n&gt;50</td>
<td>5 months</td>
<td>Severe, +++, Injectable Antimony compound</td>
</tr>
<tr>
<td>29</td>
<td>BAHC, Kashipur, Purulia</td>
<td>Mahdev Modak Jhara</td>
<td>39</td>
<td>5.4.2012</td>
<td>ND MC-1, 10 Months</td>
<td>Multiple warts on fore limbs, n&gt;30</td>
<td>4 months</td>
<td>Moderate, ++, Auto hemo therapy</td>
</tr>
<tr>
<td>30</td>
<td>BAHC, Kashipur, Purulia</td>
<td>Sanatan Hansda</td>
<td>52, 7.4.2012</td>
<td>Sub adult ND BK-1, 3.5 Years</td>
<td>One large cutaneous wart on right eye</td>
<td>6 months</td>
<td>Moderate, ++, Surgically removed</td>
<td></td>
</tr>
<tr>
<td>31</td>
<td>ABAHC, Sukhrumma, Arsha Block</td>
<td>Hiraram Mahato Kourang</td>
<td>1386, 22.9.2011</td>
<td>ND BK-1, 3 Years</td>
<td>Numerous warts on face, neck and body, n&gt;50</td>
<td>7 months</td>
<td>Severe, ++++, Treated by Anthiomalinoparenterally</td>
<td></td>
</tr>
<tr>
<td>32</td>
<td>ABAHC, Sukhrumma, Arsha Block</td>
<td>Biswajit Mahato Sukhram Mura</td>
<td>837, 27.7.2011</td>
<td>ND BK-1, 5 Years</td>
<td>Dome shaped warts on head and neck, n=8</td>
<td>3 months</td>
<td>Mild, +, Thuja orally</td>
<td></td>
</tr>
<tr>
<td>33</td>
<td>ABAHC, Sukhrumma, Arsha Block</td>
<td>Jaladhar Mahato Kourang</td>
<td>2374, 6.1.2011</td>
<td>CBJ cow-1, 3 Years</td>
<td>Diffuse frond type growths on teat crest, n=6</td>
<td>4 months</td>
<td>Mild, +, Thuja orally</td>
<td></td>
</tr>
<tr>
<td>34</td>
<td>ABAHC, Sukhrumma, Arsha Block</td>
<td>Gayaram Mahato Kourang</td>
<td>2222, 23.12.2010</td>
<td>ND cow-1, 3 Years</td>
<td>Dome shaped warts on face, neck and dewlap, n&gt;20</td>
<td>5 months</td>
<td>Moderate, ++, Anthiomalinoparenterally</td>
<td></td>
</tr>
<tr>
<td>35</td>
<td>SAHC Manbazar (DPAP), Purulia</td>
<td>Balaram Gope Battrone</td>
<td>5614, 25.1.2011</td>
<td>ND BK-1, 5 Years</td>
<td>Single wart (8 cm) on the lower neck</td>
<td>8 months</td>
<td>Mild, +, Surgically removed</td>
<td></td>
</tr>
<tr>
<td>36</td>
<td>SAHC Manbazar (DPAP), Purulia</td>
<td>Lakshmimudi Hembram, Dolderia</td>
<td>2404, 16.8.2011</td>
<td>Gir HF-1, 2 Years</td>
<td>Cluster of warts (5-7 cm) on neck, dewlap and chest, n&gt;50</td>
<td>4 months</td>
<td>Severe, ++++, Treated by Anthiomalinoparenterally</td>
<td></td>
</tr>
<tr>
<td>37</td>
<td>SAHC Manbazar (DPAP), Purulia</td>
<td>Lehal Baori, Bhurasol</td>
<td>2577, 23.8.2011</td>
<td>ND Young Bull-1, 3 Years</td>
<td>Cluster of warts like bunch of grapes on neck, n&gt;20</td>
<td>4 months</td>
<td>Moderate, ++++, Anthiomalinoparenterally</td>
<td></td>
</tr>
<tr>
<td>38</td>
<td>SAHC Manbazar (DPAP), Purulia</td>
<td>Krishna Baori Baro Jaganathpur</td>
<td>3801, 12.10.2011</td>
<td>ND BK-1, 5 Years</td>
<td>Multiple warts (3-5 cm) at left axilla, n=5</td>
<td>4 months</td>
<td>Mild, +, Removed surgically</td>
<td></td>
</tr>
<tr>
<td>39</td>
<td>SAHC Manbazar (DPAP), Purulia</td>
<td>Sanat Rajowar Jharbagda</td>
<td>3886, 15.10.2011</td>
<td>ND BK-1, 5 Years</td>
<td>Warts on axilla, lumber region &amp; medial aspect of thigh, n&gt;30</td>
<td>7 months</td>
<td>Moderate, ++++, Anthiomalinoparenterally</td>
<td></td>
</tr>
<tr>
<td>40</td>
<td>SAHC Manbazar (DPAP), Purulia</td>
<td>Sanat Rajowar Jharbagda</td>
<td>3887, 15.10.2011</td>
<td>ND BK-1, 5 Years</td>
<td>Multiple warts on neck, back and shoulder, n&gt;20</td>
<td>7 months</td>
<td>Moderate, ++++, Anthiomalinoparenterally</td>
<td></td>
</tr>
<tr>
<td>41</td>
<td>SAHC Manbazar (DPAP), Purulia</td>
<td>Bikash Mudi Nitenny</td>
<td>3901, 17.10.2011</td>
<td>ND Young Bull-1, 3 Years</td>
<td>Numerous hard thorny warts (3-5 cm) with broad base on fore limbs, neck and shoulder, n&gt;30</td>
<td>7 months</td>
<td>Moderate, ++++, Auto hemo therapy and Thuja orally</td>
<td></td>
</tr>
<tr>
<td>42</td>
<td>SAHC Manbazar (DPAP), Purulia</td>
<td>Bahadur Garai Dishri</td>
<td>4451, 21.11.2011</td>
<td>Gir HF-1, 18 Months</td>
<td>Extensive lesions (2-5 cm) all over the body, n&gt;100</td>
<td>6 months</td>
<td>Severe, ++++, Auto hemo therapy and Thuja orally</td>
<td></td>
</tr>
<tr>
<td>43</td>
<td>SAHC Manbazar (DPAP), Purulia</td>
<td>Baru Baori Madhupur</td>
<td>6319, 17.3.2012</td>
<td>ND Young Bull-1, 3 Years</td>
<td>Multiple warts (3-5 cm) on face, eyes, ears and neck, n&gt;20</td>
<td>4 months</td>
<td>Moderate, ++++, Inj Anthiomalinoparenterally</td>
<td></td>
</tr>
</tbody>
</table>

**Results** | 194
<table>
<thead>
<tr>
<th>Case No.</th>
<th>Name of the Patient</th>
<th>Date</th>
<th>Age</th>
<th>Lesion Description</th>
<th>Response</th>
<th>Treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td>44</td>
<td>SAHC Manbazar(DPAP)</td>
<td>111</td>
<td>9.4.2012</td>
<td>ND Sub adult BK-1, 3 Years</td>
<td>Numerous wart like lesions (3-5 cm) on fore limbs and trunk, n&gt;50</td>
<td>5 months</td>
</tr>
<tr>
<td>45</td>
<td>SAHC Manbazar(DPAP)</td>
<td>267</td>
<td>17.4.2012</td>
<td>ND Young Bullock-1, 3 Years</td>
<td>Squat type warts on Neck, fly blown lesions on chest, n &gt;30</td>
<td>7 months</td>
</tr>
<tr>
<td>46</td>
<td>BAHC, Purulia-1</td>
<td>1618</td>
<td>15.6.11</td>
<td>Gir FC-1, 11 Months</td>
<td>Cauliflower like warts (3-5 cm) on both sides of the neck, dew lap and brisket, n=20</td>
<td>3 Months</td>
</tr>
<tr>
<td>47</td>
<td>BAHC, Purulia-1</td>
<td>2132</td>
<td>17.10.12</td>
<td>ND Cow-1, 4 Years</td>
<td>Rice grain type warts (1-2 cm) on all four teats, n=12</td>
<td>6 Months</td>
</tr>
<tr>
<td>48</td>
<td>BAHC, Purulia-1</td>
<td>2133</td>
<td>17.10.2012</td>
<td>ND HF-1, 3 Years</td>
<td>Small cauliflower like warts (2-3 cm) on head, neck and thorax, n&gt;20</td>
<td>7 Months</td>
</tr>
<tr>
<td>49</td>
<td>BAHC, Purulia-1</td>
<td>1646</td>
<td>21.9.11</td>
<td>CBJ Cow-1, 5 Years</td>
<td>Small frond type warts (2-3 cm) on teats and udder, n&gt;15</td>
<td>5 Months</td>
</tr>
<tr>
<td>50</td>
<td>BAHC, Purulia-1</td>
<td>1656</td>
<td>22.9.11</td>
<td>ND BK-1, 3 Years</td>
<td>Cauliflower like warts (3-5 cm) on left side of the neck region and back, n=6</td>
<td>4 Months</td>
</tr>
<tr>
<td>51</td>
<td>BAHC, Purulia-1</td>
<td>2287</td>
<td>8.11.12</td>
<td>ND MC-1, 12 Months</td>
<td>Extensive lesions (3-5 cm) on face, neck and fore limbs, n&gt;50</td>
<td>5 Months</td>
</tr>
<tr>
<td>52</td>
<td>BAHC, Purulia-1</td>
<td>1693</td>
<td>30.08.12</td>
<td>Graded Gir Cow-1, 4 Years</td>
<td>Small frond type warts (2-3 cm) on teats and udder, n&gt;15</td>
<td>4 Months</td>
</tr>
<tr>
<td>53</td>
<td>BAHC, Purulia-1</td>
<td>2132</td>
<td>17.10.12</td>
<td>ND BK-1, 5 Years</td>
<td>Cauliflower like warts (3-5 cm) on left fore limb, lower neck region and back, n=6</td>
<td>4 Months</td>
</tr>
<tr>
<td>54</td>
<td>BAHC, Purulia-1</td>
<td>2133</td>
<td>17.10.12</td>
<td>Gir HF-1, 2 Years</td>
<td>Extensive lesions (3-5 cm) on face, ear tips, neck and fore limbs, n&gt;50</td>
<td>4 Months</td>
</tr>
<tr>
<td>55</td>
<td>BAHC, Purulia-1</td>
<td>2139</td>
<td>6.11.12</td>
<td>ND Young Bull-1, 3 Years</td>
<td>Cauliflower like warts (3-5 cm) on both sides of the neck, n=4</td>
<td>5 Months</td>
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</table>
Table-40: Summary of Institutional survey of cutaneous wart (CWT) and teat papilloma (TP) in cattle and buffalo in Purulia District of West Bengal

<table>
<thead>
<tr>
<th>Breeds affected</th>
<th>No.of recorded clinical wart cases</th>
<th>Sex</th>
<th>Age group</th>
<th>No of CWT cases</th>
<th>No of TP cases</th>
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<tbody>
<tr>
<td></td>
<td></td>
<td>F-12</td>
<td>Calf hood</td>
<td>3</td>
<td>8</td>
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<tr>
<td>Indigenous and non-descript cattle</td>
<td>46</td>
<td>M-34</td>
<td>Sub-adult</td>
<td>10</td>
<td>34</td>
</tr>
<tr>
<td>Cross breed cattle (CBJ)</td>
<td>9</td>
<td>F-8</td>
<td>Adult</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td></td>
<td>M-1</td>
<td>Old</td>
<td>-</td>
<td>N/A</td>
</tr>
<tr>
<td>Cross breed cattle (PJ)</td>
<td>-</td>
<td>F</td>
<td>Calf hood</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td>M</td>
<td>Sub-adult</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Cross breed cattle (HLX)</td>
<td>-</td>
<td>F</td>
<td>Adult</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td>M</td>
<td>Old</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Buffalo</td>
<td>-</td>
<td>F</td>
<td>Calf hood</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td>M</td>
<td>Sub-adult</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Grand Total</td>
<td>55</td>
<td>F-20</td>
<td>Adult</td>
<td>28</td>
<td>49</td>
</tr>
<tr>
<td></td>
<td></td>
<td>M-35</td>
<td>Old</td>
<td>-</td>
<td>6</td>
</tr>
</tbody>
</table>
Table-41: Institutional survey on the recorded incidence of bovine papillomatosis in West Midnapur district, West Bengal

<table>
<thead>
<tr>
<th>Sl No</th>
<th>Name of the centre</th>
<th>Name of the farmer</th>
<th>O.P. No</th>
<th>Date</th>
<th>Category of animal</th>
<th>Gross pathological observations</th>
<th>Duration of infection</th>
<th>Remarks on severity of affections &amp; treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>BAHC, Salboni</td>
<td>Gopal Mallick</td>
<td>4144</td>
<td>09.03.11</td>
<td>ND HF-1, 2 years</td>
<td>Bunch of grapes like warts on dorsal neck and shoulder, 1to 2 cm in size, n&gt;15</td>
<td>6 months</td>
<td>++++, Moderate, Surgical excision</td>
</tr>
<tr>
<td>2</td>
<td>BAHC, Salboni</td>
<td>Tinu Dey</td>
<td>552</td>
<td>05.05.11</td>
<td>CBJ HF-1, 2 years</td>
<td>Multiple warts (1-2 cm) present on face, eyelids, ears and neck, n&gt;30</td>
<td>7 months</td>
<td>++++, Moderate, Auto hemotherapy</td>
</tr>
<tr>
<td>3</td>
<td>BAHC, Salboni</td>
<td>Mithun Bhandi</td>
<td>3659</td>
<td>17.10.11</td>
<td>MB HF-1, 3 Years</td>
<td>A big size cauliflower like wart on the lower neck, 5cm in size</td>
<td>6 months</td>
<td>+, Mild, surgical excision</td>
</tr>
<tr>
<td>4</td>
<td>BAHC, Salboni</td>
<td>Sankar Mondal ChakTarini</td>
<td>975</td>
<td>02.06.2011</td>
<td>CBJ HF-1, 2 years</td>
<td>Multiple warts on head, neck, face and muzzle, n&gt;20</td>
<td>4 months</td>
<td>++++, Mild, surgical excision</td>
</tr>
<tr>
<td>5</td>
<td>BAHC, Salboni</td>
<td>Mithun Bhandi</td>
<td>822</td>
<td>15.05.2012</td>
<td>MB HF-1, 3.5 Years</td>
<td>Cauliflower like warts (2-3 cm in diameter) on left ear pinna and shoulder point, n&gt;30</td>
<td>6 months</td>
<td>+++, Moderate, Inj. Ivermectin</td>
</tr>
<tr>
<td>6</td>
<td>BAHC, Salboni</td>
<td>Ashoke Mondal</td>
<td>609</td>
<td>03.05.2012</td>
<td>ND HF-1, 2 years</td>
<td>Numerous sessile warts on head, neck and body, n&gt;100</td>
<td>5 months</td>
<td>++++,Severe, Autohemotherapy</td>
</tr>
<tr>
<td>7</td>
<td>BAHC, Gopiballavpur,Jhargram</td>
<td>Haradhan Kheruri, Dharampur</td>
<td>05/09</td>
<td>01.04.2010</td>
<td>ND Cow-1, 4 years</td>
<td>A big cauliflower like wart on neck, 5 cm in diameter</td>
<td>6 months</td>
<td>+,Mild, Surgical excision</td>
</tr>
<tr>
<td>8</td>
<td>BAHC, Gopiballavpur,Jhargram</td>
<td>Ajit Kundu, Dharampur</td>
<td>332/07</td>
<td>31.12.2010</td>
<td>ND Cow-1, 4 years</td>
<td>Small filiform warts on all four teats, n&gt;10</td>
<td>6 months</td>
<td>++++, Moderate, Inj. Anthiomaline,</td>
</tr>
<tr>
<td>9</td>
<td>BAHC, Gopiballavpur, Jhargram</td>
<td>Pratap Sing, Kendugari</td>
<td>53/2</td>
<td>02.05.2011</td>
<td>CBJ MC-1, 12 Months</td>
<td>Numerous dome shaped warts (3-5 cm) on left flank and hip region, n&gt;40</td>
<td>5 months</td>
<td>++++, Moderate, Autohemotherapy</td>
</tr>
<tr>
<td>10</td>
<td>BAHC, Gopiballavpur, Jhargram</td>
<td>Bijoy Bera, Mohulboni</td>
<td>181/01</td>
<td>06.06.2011</td>
<td>ND HF-1, 3.5 year</td>
<td>Multiple peanut shaped warts on head, below the neck and eye, n&gt;20</td>
<td>1 month</td>
<td>++++, Moderate, Inj. Ivermectin</td>
</tr>
<tr>
<td>11</td>
<td>ABAHC, Sarberia-1, Daspur Block</td>
<td>Madan Pain, Vill-Katarpur</td>
<td>3306</td>
<td>06.01.2012</td>
<td>CBJ Cow-1, 4 years</td>
<td>Frond type warts (1-3 cm) on all four teats, n=10</td>
<td>3 months</td>
<td>+,Mild, Thuja orally</td>
</tr>
<tr>
<td>12</td>
<td>ABAHC, Sarberia-1, Daspur Block</td>
<td>Anil Jana, Ramchandrapur</td>
<td>4139</td>
<td>17.02.2012</td>
<td>CBJ HF-1, 2 year</td>
<td>Multiple warts (4-6 cm) on neck, wide base papilloma, n=10</td>
<td>6 months</td>
<td>++++, Moderate, Surgical excision</td>
</tr>
<tr>
<td>13</td>
<td>SAHC, Jhargram</td>
<td>Gurubari Hembram, Jhoria</td>
<td>156</td>
<td>04.05.2009</td>
<td>ND HF-1, 2 years approx</td>
<td>Numerous warts (4-5 cm) on dewlap and fore limbs, n&gt;100</td>
<td>7 months</td>
<td>++++, Severe, Autohemotherapy and Inj. Ivermectin</td>
</tr>
<tr>
<td>14</td>
<td>SAHC, Jhargram</td>
<td>Subhasis Santra, Shaktinagar</td>
<td>475</td>
<td>25.06.2009</td>
<td>CBJ Cow-1, 3 years</td>
<td>A big sized cauliflower like wart (7 cm in diameter) on right abdomen</td>
<td>6 months</td>
<td>+,Mild, Surgical removal</td>
</tr>
<tr>
<td>No.</td>
<td>GLS, District</td>
<td>Name of the Animal, Place</td>
<td>Age</td>
<td>Disease</td>
<td>Duration</td>
<td>Stage</td>
<td>Treatment</td>
<td></td>
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<tr>
<td>-----</td>
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<td>-------</td>
<td>-----------</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>SAHC, Jhargram</td>
<td>Rai Kishore Das, Jharia</td>
<td>2270</td>
<td>ND FC-11 Months</td>
<td>Whole body papillomatosis, n&gt;100</td>
<td>4 months</td>
<td>++++, Severe, Inj. Anthiomaline and auto hemotherapy</td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>SAHC, Jhargram</td>
<td>Dipak Sadhu, Bachurdoba</td>
<td>294</td>
<td>CBJ HF-1, 2.5 Years</td>
<td>Multiple warts (4-7 cm) on head, neck, ear tips and muzzle, n&gt;30</td>
<td>6 months</td>
<td>++++, Moderate, Inj. Anthiomaline</td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>SAHC, Jhargram</td>
<td>Bhagabati Shaw, Shaktinagar</td>
<td>789</td>
<td>ND Cow-1, 4 years approx.</td>
<td>Small frond type warts (2-3 cm) on all four teats, n&gt;10</td>
<td>6 months</td>
<td>++++, Moderate, Surgical cure</td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>SAHC, Jhargram</td>
<td>Manmatha Mahato, Shalukberia</td>
<td>2142</td>
<td>CBJ MC-1, 12 Months</td>
<td>Morbid warty growths (4-5 cm) on head, neck and thorax, n&gt;20</td>
<td>4 months</td>
<td>++++, Moderate, Inj. Anthiomaline</td>
<td></td>
</tr>
<tr>
<td>19</td>
<td>SAHC, Jhargram</td>
<td>Giri Bahadur</td>
<td>2601</td>
<td>ND FC-1, 9 Months</td>
<td>Extensive nodular wart on hind limbs, n&gt;50</td>
<td>3 months</td>
<td>++++, Moderate, Inj. Anthiomaline</td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>SAHC, Jhargram</td>
<td>Ratan Agarwal, Bachurdoba</td>
<td>599</td>
<td>ND MC-1, 7 Months</td>
<td>Multiple warts in cluster on neck region, n&gt;30</td>
<td>2 months</td>
<td>++++, Thuja orally</td>
<td></td>
</tr>
<tr>
<td>21</td>
<td>SAHC, Jhargram</td>
<td>Binod Sahoo</td>
<td>1262</td>
<td>CBJ Cow-1, 4 years</td>
<td>Rice grain type warts (2-3 cm) on all four teats, n&gt;20</td>
<td>5 months</td>
<td>++++, Inj. Anthiomaline tried</td>
<td></td>
</tr>
<tr>
<td>22</td>
<td>BAHC, Pirakata</td>
<td>Shantipada Mahato, Lalua</td>
<td>3659</td>
<td>CBJ FC-1, 11 Months</td>
<td>Multiple firm raised gray to black verrucous tumours on gluteal region, hind limbs and perineum</td>
<td>4 months</td>
<td>++++, Inj. Anthiomaline tried</td>
<td></td>
</tr>
<tr>
<td>23</td>
<td>BAHC, Pirakata</td>
<td>Gourishankar Mahato, Kurapacha</td>
<td>3659</td>
<td>CBJ HF-1, 2.5 years</td>
<td>Cauliflower like warts (3-4 cm) on tail base, lumber and hind limbs, n&gt;50</td>
<td>6 months</td>
<td>++++, severe Maggotized, Dressing of fly blown warts, and Inj. Anthiomaline administered</td>
<td></td>
</tr>
<tr>
<td>24</td>
<td>BAHC, Pirakata</td>
<td>Mithun Bhaudi, Anschura</td>
<td>822</td>
<td>MB HF-1, 3 Years</td>
<td>Rice grain type warts (2-3 cm) on teats, n&lt;10</td>
<td>5 months</td>
<td>+, Mild, Thuja orally</td>
<td></td>
</tr>
</tbody>
</table>
Table 42: Breed, age group and sex wise synopsis of cutaneous wart (CWT) and teat papilloma (TP) in cattle and buffalo recorded in Veterinary clinics in the District of West Midnapur

<table>
<thead>
<tr>
<th>Breeds affected</th>
<th>No. of wart cases recorded in vet clinic</th>
<th>Sex</th>
<th>Age group</th>
<th>No of CWT cases</th>
<th>No of TP cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indigenous and non-descript cattle</td>
<td>10</td>
<td></td>
<td>Calf hood</td>
<td>Sub-adult</td>
<td>Adult</td>
</tr>
<tr>
<td></td>
<td></td>
<td>F-9</td>
<td>2</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>M-1</td>
<td>1</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Cross breed cattle (CBJ)</td>
<td>11</td>
<td>F-9</td>
<td>1</td>
<td>5</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>M-2</td>
<td>2</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Cross breed cattle (PJ)</td>
<td>-</td>
<td>F</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td>M</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Cross breed cattle (HLX)</td>
<td>-</td>
<td>F</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td>M</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Buffalo</td>
<td>3</td>
<td>F-3</td>
<td>-</td>
<td>3</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td>M</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Grand Total</td>
<td>24</td>
<td>F-21</td>
<td>6</td>
<td>12</td>
<td>6</td>
</tr>
<tr>
<td>Sl No</td>
<td>Name of the centre</td>
<td>Name of the farmer</td>
<td>O.P. No</td>
<td>Date</td>
<td>Category of animal</td>
</tr>
<tr>
<td>-------</td>
<td>--------------------</td>
<td>--------------------</td>
<td>---------</td>
<td>------------</td>
<td>-------------------</td>
</tr>
<tr>
<td>1</td>
<td>BAHC, Mahishadal</td>
<td>Jayanta Patra</td>
<td>7519</td>
<td>27.01.12</td>
<td>ND HF-1, 2 years</td>
</tr>
<tr>
<td>2</td>
<td>BAHC, Mahishadal</td>
<td>Jhantu Patra</td>
<td>7520</td>
<td>27.01.12</td>
<td>CBJ Cow-1, 3.5 years</td>
</tr>
<tr>
<td>3</td>
<td>BAHC, Mahishadal</td>
<td>Nita Bhunia</td>
<td>7613</td>
<td>02.02.12</td>
<td>Zebu MC-1, 8 months</td>
</tr>
<tr>
<td>4</td>
<td>BAHC, Mahishadal,</td>
<td>Nilima Bayal</td>
<td>7762</td>
<td>06.02.12</td>
<td>CBJ HF-1, 2.5 years</td>
</tr>
<tr>
<td>5</td>
<td>BAHC, Mahishadal,</td>
<td>Panchanan Jana</td>
<td>7914</td>
<td>11.02.12</td>
<td>ND Cow-1, 4 years</td>
</tr>
<tr>
<td>6</td>
<td>BAHC, Mahishadal,</td>
<td>Tapan Samanta</td>
<td>1135</td>
<td>24.05.12</td>
<td>ND MC-1, 10 Months</td>
</tr>
<tr>
<td>7</td>
<td>BAHC, Contai-III</td>
<td>Benu Das, Murisai</td>
<td>2113</td>
<td>23.12.10</td>
<td>Gir HF-1, 4 years</td>
</tr>
<tr>
<td>8</td>
<td>BAHC, Contai-III</td>
<td>Bhaskar Pattanayak</td>
<td>2387</td>
<td>06.01.11</td>
<td>Deshi HF-1, 18 Months</td>
</tr>
<tr>
<td>9</td>
<td>BAHC, Contai-III</td>
<td>Binoy Pahari</td>
<td>1998</td>
<td>27.07.11</td>
<td>CBJ HF-1, 19 Months</td>
</tr>
<tr>
<td>10</td>
<td>BAHC, Contai-III</td>
<td>Ranjit Jana</td>
<td>2276</td>
<td>27.08.11</td>
<td>CBJ HF-1, 16 Months</td>
</tr>
<tr>
<td>11</td>
<td>BAHC, Contai-III</td>
<td>Ajoy Mahapatra</td>
<td>164</td>
<td>12.04.12</td>
<td>Deshi HF-1, 18 Months</td>
</tr>
<tr>
<td>12</td>
<td>BAHC, Contai-III</td>
<td>Khagen Shit</td>
<td>1123</td>
<td>21.07.12</td>
<td>CBJ HF-1, 16 Months</td>
</tr>
<tr>
<td>13</td>
<td>BAHC, Contai-III</td>
<td>Naba Kr Maity</td>
<td>1876</td>
<td>13.08.12</td>
<td>GirHF-1, 18 Months</td>
</tr>
<tr>
<td>No.</td>
<td>Ref.</td>
<td>District</td>
<td>Village</td>
<td>Name</td>
<td>Contact</td>
</tr>
<tr>
<td>-----</td>
<td>------</td>
<td>----------</td>
<td>---------</td>
<td>------</td>
<td>---------</td>
</tr>
<tr>
<td>14</td>
<td>BAHC, Haldia Block</td>
<td>Dhananjoy Samanta Chaulkhola, Shibpur P.O.</td>
<td>2346 06.03.12</td>
<td>ND HF-1, 18 Months</td>
<td>Extensive lesions: cauliflower like, pedunculated warts (2-5 cm), whole body papillomatosis, n&gt;200</td>
</tr>
<tr>
<td>15</td>
<td>BAHC, Satmail, East Midnapur</td>
<td>Mitu Sahu Biswanathpur</td>
<td>812 22.05.10</td>
<td>Gir MC-1, 13 Months</td>
<td>Solitary, firm, wart like spherical tumour, big sized (8 cm diameter)</td>
</tr>
<tr>
<td>16</td>
<td>BAHC, Satmail, East Midnapur</td>
<td>Sujoy Sahu Dakshin Charaikha</td>
<td>1057 14.06.10</td>
<td>Deshi cow-1, 4 years</td>
<td>Small, persistent flat type warts (4-5 cm) on chest and belly, n&gt;30</td>
</tr>
<tr>
<td>17</td>
<td>BAHC, Satmail, East Midnapur</td>
<td>Mantu Jana Motaghat</td>
<td>1522 19.07.10</td>
<td>ND HF-1, 18 Months</td>
<td>Cauliflower like, pedunculated warts around the eyes and upper eyelids and face, n&gt;30</td>
</tr>
<tr>
<td>18</td>
<td>BAHC, Satmail, East Midnapur</td>
<td>Nirmal Kumar Giri Teduni</td>
<td>2652 19.10.10</td>
<td>Gir HF-1, 18 Months</td>
<td>Dense vegetative wart lesions, (cauliflower like, pedunculated warts) all over the body, n&gt;100</td>
</tr>
<tr>
<td>19</td>
<td>BAHC, Satmail, East Midnapur</td>
<td>Subodh Jana Parulia</td>
<td>4038 07.03.11</td>
<td>Deshi cow-1, 4 years</td>
<td>Multiple rice grain type warts (1-2 cm) on all four teats (TP), N&gt;20</td>
</tr>
<tr>
<td>20</td>
<td>BAHC, Satmail, East Midnapur</td>
<td>Ganga Narayan Sen Hatiari</td>
<td>169 08.04.11</td>
<td>Deshi cow-1, 3 years</td>
<td>Small to medium sized (3-5 cm) cauliflower like warts on fore limbs and belly, n&gt;40</td>
</tr>
<tr>
<td>21</td>
<td>BAHC, Satmail, East Midnapur</td>
<td>Gouranga Banik, Bachhipur</td>
<td>504 30.04.11</td>
<td>CBJ HF-1, 16 Months</td>
<td>Multiple, small cauliflower like warts (2-3 cm) on face, neck and back, n&gt;40</td>
</tr>
<tr>
<td>22</td>
<td>BAHC, Satmail, East Midnapur</td>
<td>Jyotsna Sahu Barani</td>
<td>761 19.05.11</td>
<td>CBJ HF-1, 18 Months</td>
<td>Peri orbital and facial warts (pedunculated) (2-4 cm), n&gt;20</td>
</tr>
<tr>
<td>23</td>
<td>BAHC, Satmail, East Midnapur</td>
<td>Sudhir Kr Bera, Brajamal Midnapur</td>
<td>876 26.05.11</td>
<td>CBJ Cow-1, 3 Years</td>
<td>Small cauliflower like warts (2-3 cm) around the eyes, neck and ear pinnae, n&gt;20</td>
</tr>
<tr>
<td>24</td>
<td>BAHC, Satmail, East Midnapur</td>
<td>Bikash Chandra Bar, Rajendra Chak</td>
<td>1616 04.11.11</td>
<td>ND MC-1, 11 Months</td>
<td>Small cauliflower like warts (3-4 cm) around the eyes, ear tips, lower neck, dewlap and brisket, n&gt;30</td>
</tr>
<tr>
<td>25</td>
<td>BAHC, Satmail, East Midnapur</td>
<td>SK. Jauuddin, Bancha</td>
<td>1643 08.11.11</td>
<td>CBJ Cow-1, 3 Years</td>
<td>Small cauliflower like warts (2-4 cm) around the anus and perivulval region, n&gt;20</td>
</tr>
<tr>
<td>26</td>
<td>BAHC, Satmail, East Midnapur</td>
<td>Dipa Rani Jana Shyampur</td>
<td>1788 12.12.11</td>
<td>ND cow-1, 4 Years</td>
<td>Multiple cauliflower like, pedunculated warts (3-5 cm) on left lower abdomen as if bunch of grapes, n&gt;40</td>
</tr>
<tr>
<td>27</td>
<td>BAHC, Satmail, East Midnapur</td>
<td>Raghu Nath Das Egra</td>
<td>1839 21.12.11</td>
<td>Deshi cow-1, 4 Years</td>
<td>Multiple, small (1-2 cm), elongated, filiform teat warts (TP), n&gt;20</td>
</tr>
<tr>
<td>28</td>
<td>BAHC, Satmail, East Midnapur</td>
<td>Sandhya Santra Tolakana</td>
<td>2008 10.01.12</td>
<td>Gir FC-1, 16 Months</td>
<td>Dense vegetative, non pedunculated wart lesions (2-5 cm) on all four limbs and scattered lesions all over the body, n&gt;100</td>
</tr>
<tr>
<td>29</td>
<td>BAHC, Satmail, East Midnapur</td>
<td>Pradip Manna Erenda</td>
<td>2573 23.03.12</td>
<td>CBJ Cow-1, 3 Years</td>
<td>Multiple rice grain type warts (1-2 cm) on all four teats (TP), n&gt;20</td>
</tr>
</tbody>
</table>
Table-44: Breed, age group and sex wise synopsis of cutaneous wart (CWT) and teat papilloma (TP) in cattle and buffalo recorded in Veterinary clinics in the District of East Midnapur

<table>
<thead>
<tr>
<th>Breeds affected</th>
<th>No.of wart cases recorded in Vety Clinics</th>
<th>Sex</th>
<th>Age group</th>
<th>No of CWT cases</th>
<th>No of TP cases</th>
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<tr>
<td>Indigenous and non-descript cattle</td>
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<td>Cross breed cattle (CBJ)</td>
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<tr>
<td>Cross breed cattle (PJ)</td>
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<td>F</td>
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<tr>
<td>Cross breed cattle (HLX)</td>
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<td></td>
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<td>M</td>
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</tr>
<tr>
<td>Buffalo</td>
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<td>F</td>
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<td>Sl No</td>
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<td>Name of the farmer</td>
<td>O.P. No</td>
<td>Date</td>
<td>Category of animal</td>
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<td>Shibu Das Avirampur, Howrah</td>
<td>1309</td>
<td>27.09.2008</td>
<td>Graded up Gircow-1, 4 years</td>
</tr>
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<td>2</td>
<td>BAHC, UdoyNarayanpur, Howrah</td>
<td>Monica Malik Sigt, Howrah</td>
<td>3712</td>
<td>07.02.2009</td>
<td>ND MC-1, 10 Months</td>
</tr>
<tr>
<td>3</td>
<td>BAHC, UdoyNarayanpur, Howrah</td>
<td>Md. Amin Rajapur, Howrah</td>
<td>1676</td>
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<td>CBJ HF-1, 2 years</td>
</tr>
<tr>
<td>4</td>
<td>BAHC, UdoyNarayanpur, Howrah</td>
<td>Sk. Salum Rajapur, Howrah</td>
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<td>ND FC-1, 10 Months</td>
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<td>Sefali Adak Kumarpra, Howrah</td>
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<td>Gir cow-1, 4 years</td>
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<td>Laltu Bag Avirampur, Howrah</td>
<td>6532</td>
<td>10.02.2012</td>
<td>CBJ HF-1, 1.5 years</td>
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<tr>
<td>7</td>
<td>ABAHC, Bankra, Howrah</td>
<td>Gopal Pal Makoda, Salat, Howrah</td>
<td>477</td>
<td>18.05.2011</td>
<td>CBJ HF-1, 2 years</td>
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<td>ABAHC, Bankra, Howrah</td>
<td>Susama Manna TentuliKuli, Howrah</td>
<td>541</td>
<td>23.08.2011</td>
<td>CBJ HF-1, 1.5 years</td>
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<td>ABAHC, Bankra, Howrah</td>
<td>Amir Mollah Bankra, Dakshinpara, Howrah</td>
<td>618</td>
<td>12.10.2011</td>
<td>ND cow-1, 4 years</td>
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<tr>
<td>10</td>
<td>ABAHC, Bankra, Howrah</td>
<td>Kartick Bag Karatkal; Bankra, Howrah</td>
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<td>12.12.2012</td>
<td>CBJ HF-1, 2.5 years</td>
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<tr>
<td>11</td>
<td>ABAHC, Bankra, Howrah</td>
<td>Rabi Sain</td>
<td>994</td>
<td>20.12.2011</td>
<td>CBJ MC-1, 10 Months</td>
</tr>
<tr>
<td>Howrah</td>
<td>Tentulkuli; Howrah</td>
<td>the eyes, n =?</td>
<td>excision</td>
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<tr>
<td>12 ABAHC, Bankra, Howrah</td>
<td>Mrittunjoy Naskar, Danshi, Howrah</td>
<td>05.01.2012</td>
<td>CBJ HF-1, 3 years</td>
<td>Round to ovoid stalked papilloma (2-3 cm), on hind limbs and perineum, n&gt;20</td>
<td>5 months</td>
</tr>
<tr>
<td>13 ABAHC, Bankra, Howrah</td>
<td>Sahoni Begam Kabapara, Bankra</td>
<td>20.01.2012</td>
<td>CBJ HF-1, 3 years</td>
<td>Scattered sessile type warts distributed on the hind limbs and perineum, n&gt;20</td>
<td>4 months</td>
</tr>
<tr>
<td>14 ABAHC, Bankra, Howrah</td>
<td>Amit Das, Jagacha, Howrah</td>
<td>03.02.2012</td>
<td>CBJ HF-1, 2.5 Years</td>
<td>Dome shaped warts on all four teats, n=14</td>
<td>6 months</td>
</tr>
<tr>
<td>15 ABAHC, Bankra, Howrah</td>
<td>Pradip Das, Japni Gate, Bankra</td>
<td>04.02.2012</td>
<td>Desi cow-1, 4 years</td>
<td>Round to ovoid stalked papilloma, (n = 12) on udder and teats</td>
<td>5 months</td>
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<tr>
<td>16 ABAHC, Udoy - Narayanpur, Howrah</td>
<td>Shantanu Bapuli, Najorkhan</td>
<td>2.8.2011</td>
<td>CBJ HF-1, 18 Months</td>
<td>Small cauliflower like warts (3-5 cm) on head, neck and dewlap, n&gt;20</td>
<td>4 Months</td>
</tr>
<tr>
<td>17 ABAHC, Udoy - Narayanpur, Howrah</td>
<td>Dulal Hait, Krishnachak</td>
<td>16.9.2011</td>
<td>CBJ Cow-1, 4 Years</td>
<td>Rice grain type warts on all four teats, n&gt;10</td>
<td>6 Months</td>
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<tr>
<td>18 ABAHC, Udoy - Narayanpur, Howrah</td>
<td>Filu Manik, Pownerpur, Amta-1</td>
<td>18.7.2012</td>
<td>CBJ FC-13 Months</td>
<td>Small, round, nodular, pedunculated warts (2-3 cm) on both sides of the neck and fore limbs, n&gt;30</td>
<td>3 Months</td>
</tr>
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</table>
Table-46: Breed, age group and sex wise synopsis of cutaneous wart (CWT) and teat papilloma (TP) in cattle and buffalo recorded in Veterinary clinics in the District of Howrah

<table>
<thead>
<tr>
<th>Breeds affected</th>
<th>Total No. of wart cases</th>
<th>Sex</th>
<th>Age group</th>
<th>No of CWT cases</th>
<th>No of TP cases</th>
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<tr>
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<td>Sub-adult</td>
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<td>Calf hood</td>
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<td>Sub-adult</td>
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<td>Sub-adult</td>
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<td>Cross breed  cattle (HLX)</td>
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<td>Calf hood</td>
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<td>Sub-adult</td>
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<td>Calf hood</td>
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<td>Sub-adult</td>
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<td>M</td>
<td>Calf hood</td>
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<td>Sub-adult</td>
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<td>18</td>
<td>F-16</td>
<td>Calf hood</td>
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<td>14</td>
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<td>Old</td>
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<td>Calf hood</td>
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<td>Adult</td>
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<td></td>
<td>Old</td>
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</table>
### Table-47: Institutional survey on the recorded incidence of cutaneous bovine papillomatosis in Nadia District, West Bengal

<table>
<thead>
<tr>
<th>Sl No</th>
<th>Name of the centre</th>
<th>Name of the farmer</th>
<th>O.P. No</th>
<th>Date</th>
<th>Category of animal</th>
<th>Gross pathological observations</th>
<th>Duration of infection</th>
<th>Remarkson severity of affections &amp; treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>SAHC, Chapra, Nadia</td>
<td>Romjan Ali</td>
<td>3995</td>
<td>30.12.11</td>
<td>CBJ HF-1, 2 years</td>
<td>Multiple sessile type warts (3-5 cm) on head, neck and fore limbs; n = 25</td>
<td>5 months</td>
<td>++++, Moderate Homeopathic remedy</td>
</tr>
<tr>
<td>2</td>
<td>SAHC, Chapra, Nadia</td>
<td>Rajia Bibi</td>
<td>3781</td>
<td>24.12.11</td>
<td>CBJ Cow-1, 3 years</td>
<td>Multiple dome shaped warts (2-3 cm) on back and belly; n = 13</td>
<td>6 months</td>
<td>++++, Moderate, Inj. Anthiomaline</td>
</tr>
<tr>
<td>3</td>
<td>SAHC, Chapra, Nadia</td>
<td>Mofiu Sk</td>
<td>4479</td>
<td>08.02.12</td>
<td>ND Bull calf-1, 11 months</td>
<td>Haes nodular warts (2-3 cm) all throughout the body; n=20</td>
<td>5 months</td>
<td>++++, Severe, Autohemotherapy</td>
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<td>4</td>
<td>BAHC, Birpara, Nadia</td>
<td>Badal Mondal</td>
<td>393/65</td>
<td>09.06.10</td>
<td>CBJ Cow-1, 3 years</td>
<td>Multiple sessile type warts (3-5 cm) on head, neck and thorax; n=16</td>
<td>6 months</td>
<td>++++, moderate, Inj. Anthiomaline</td>
</tr>
<tr>
<td>5</td>
<td>BAHC, Birpara, Nadia</td>
<td>Smarajit Halder</td>
<td>1222/74</td>
<td>12.10.10</td>
<td>CBJ Cow-1, 4 years</td>
<td>Scattered squat type warts (3-5 cm) on head, back and belly; n=17</td>
<td>4 months</td>
<td>++++, Moderate Homeopathic remedy</td>
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<tr>
<td>6</td>
<td>BAHC, Birpara, Nadia</td>
<td>Bimal Paramanik</td>
<td>1660/49</td>
<td>06.01.11</td>
<td>CBJ HF-1, 2.5 years</td>
<td>Cauliflower like growths (4-5 cm) on axillae; n = 12</td>
<td>4 months</td>
<td>++++, Moderate Homeopathic remedy</td>
</tr>
<tr>
<td>7</td>
<td>BAHC, Birpara, Nadia</td>
<td>Sumitra Biswas</td>
<td>304/21</td>
<td>03.05.11</td>
<td>CBJ Cow-1, 4 years</td>
<td>Multiple frond type warts (2-3 cm) on fore quarter; n =6</td>
<td>5 months</td>
<td>+, Mild, Thuja orally</td>
</tr>
<tr>
<td>8</td>
<td>BAHC, Birpara, Nadia</td>
<td>Nagen Biswas</td>
<td>291/21</td>
<td>20.05.12</td>
<td>CBJ HF-1, 2.5 years</td>
<td>Cauliflower like warts (3-5 cm) on head, neck and thorax; n=16</td>
<td>4 months</td>
<td>++++, Moderate Homeopathic remedy</td>
</tr>
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<td>9</td>
<td>BAHC, Chakdaha, Nadia</td>
<td>Liton Biswas</td>
<td>2222</td>
<td>23.12.10</td>
<td>ND BK-1, 4 years</td>
<td>Flattened persistent warts (4-6 cm); n =7</td>
<td>7 months</td>
<td>++++, Moderate, Inj. Anthiomaline</td>
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<td>10</td>
<td>BAHC, Chakdaha, Nadia</td>
<td>Bijnendra Majumder</td>
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<td>CBJ HF-1 ,18 Months</td>
<td>Multiple cauliflower like warts(3-6 cm) around the eyes, neck and thorax; n&gt;10</td>
<td>6 months</td>
<td>++++, Moderate Homeopathic remedy</td>
</tr>
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<td>11</td>
<td>BAHC, Chakdaha, Nadia</td>
<td>Suku Mallick</td>
<td>837</td>
<td>27.07.11</td>
<td>CBJ Cow-1, 3 years</td>
<td>Multiple sessile warts (3-5 cm) on peri-vulval region; n=6</td>
<td>5 months</td>
<td>+, Mild, Thuja orally</td>
</tr>
<tr>
<td>12</td>
<td>BAHC, Chakdaha, Nadia</td>
<td>Abinash Mondal</td>
<td>1385</td>
<td>22.09.11</td>
<td>CBJ Cow-1, 4 years</td>
<td>Frond type warts (2-3 cm) on all four teats, n&gt;10</td>
<td>7 months</td>
<td>++++, Moderate Homeopathic remedy</td>
</tr>
<tr>
<td>13</td>
<td>Epidemic Centre, presidency Div. Kalyani</td>
<td>Dipali Das</td>
<td>701</td>
<td>27.07.10</td>
<td>ND HF-1, 1.5 years</td>
<td>Multiple warts (2-3 cm) disseminating over neck, back and fore limbs ; n=30</td>
<td>7 months</td>
<td>++++, Moderate Homeopathic remedy</td>
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<tr>
<td>14</td>
<td>Epidemic Centre, presidency Div. Kalyani</td>
<td>Viki Shaow Kalyani</td>
<td>778</td>
<td>09.08.10</td>
<td>CBJ HF-1, 1.8 years</td>
<td>Multiple warty lesions on neck, dewlap, wither and barrel, n&gt;20</td>
<td>4 months</td>
<td>++++, Moderate, Inj. Anthiomaline</td>
</tr>
<tr>
<td>No.</td>
<td>Location</td>
<td>Name</td>
<td>Village/Area</td>
<td>Date</td>
<td>Age</td>
<td>Description</td>
<td>Duration</td>
<td>Grade</td>
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<tr>
<td>15</td>
<td>Epidemic Centre, Kalyani</td>
<td>Paresh Ghosh</td>
<td>Ghoshpara, Kalyani</td>
<td>25.08.10</td>
<td>2 years</td>
<td>Multiple cauliflower like warts (3-6 cm) of varying sizes on axillae and inner aspect of right thigh, n=23</td>
<td>4 months</td>
<td>+++</td>
</tr>
<tr>
<td>16</td>
<td>Epidemic Centre, Kalyani</td>
<td>Banwari Ghosh</td>
<td>Bhuttabazar, Kalyani</td>
<td>18.02.11</td>
<td>2 years</td>
<td>Growing cauliflower like warts in a vulvar region and all over the body, n=50</td>
<td>7 months</td>
<td>++++</td>
</tr>
<tr>
<td>17</td>
<td>Epidemic Centre, Kalyani</td>
<td>Dipali Das</td>
<td>Majherchar</td>
<td>2320</td>
<td>2.5 years</td>
<td>Multiple raised, nodular warts (2-3cm) on cheek, periorbital area of the face, neck and chest, n = 26</td>
<td>5 months</td>
<td>+++</td>
</tr>
<tr>
<td>18</td>
<td>BAHC, Haringhata</td>
<td>Madhu Das</td>
<td>Birohi</td>
<td>10920</td>
<td>4 years</td>
<td>Dry cauliflower like warts (4-5 cm) on neck and chest, n= 6</td>
<td>6 months</td>
<td>+</td>
</tr>
<tr>
<td>19</td>
<td>BAHC, Haringhata</td>
<td>Jasimuddin Mandal</td>
<td>Sonakhuli</td>
<td>3206</td>
<td>2 years</td>
<td>Big cauliflower like warts (5-7 cm) on neck and back, n = 2</td>
<td>5 months</td>
<td>+++</td>
</tr>
<tr>
<td>20</td>
<td>BAHC, Haringhata</td>
<td>Gosto Halder</td>
<td>Beldanga</td>
<td>8372</td>
<td>5 years</td>
<td>Big cauliflower like warts on the right medial aspect of the thigh, n = 3</td>
<td>6 months</td>
<td>+</td>
</tr>
<tr>
<td>21</td>
<td>BAHC, Haringhata</td>
<td>Kartick Mondal</td>
<td>Bamonberia</td>
<td>15859</td>
<td>3 years</td>
<td>Multiple, raised , small cauliflower like warts on head, nostrils, mouth and eyelids, n = 21</td>
<td>4 months</td>
<td>+++</td>
</tr>
<tr>
<td>22</td>
<td>BAHC, Haringhata</td>
<td>Madan Dhurlob</td>
<td>Simhat</td>
<td>4218</td>
<td>2.5 years</td>
<td>Rough, grayish irregular warts on mouth, eyelids, back and right hind limb, n = 25</td>
<td>4 months</td>
<td>+++</td>
</tr>
</tbody>
</table>
Table-48: Breed, age group and sex wise synopsis of cutaneous wart (CWT) and teat papilloma (TP) in cattle and buffalo recorded in Veterinary Clinics in Nadia District

<table>
<thead>
<tr>
<th>Breeds affected</th>
<th>Total No. of recorded wart cases</th>
<th>Sex</th>
<th>Age group</th>
<th>No of CWT cases</th>
<th>No of TP cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indigenous and non-descript cattle</td>
<td>6</td>
<td>F-2</td>
<td>Calf hood</td>
<td>2</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Sub -adult</td>
<td>2</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td>M-4</td>
<td>Adult</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Old</td>
<td>-</td>
<td>N/A</td>
</tr>
<tr>
<td>Cross breed cattle (CBJ)</td>
<td>16</td>
<td>F-14</td>
<td>Calf hood</td>
<td>7</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Sub -adult</td>
<td>7</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>M-2</td>
<td>Adult</td>
<td>-</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Old</td>
<td>-</td>
<td>N/A</td>
</tr>
<tr>
<td>Pure breed cattle (Exotic)</td>
<td>-</td>
<td>F</td>
<td>Calf hood</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Sub -adult</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td>M</td>
<td>Adult</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Old</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Cross breed cattle (HLX)</td>
<td>-</td>
<td>F</td>
<td>Calf hood</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Sub -adult</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td>M</td>
<td>Adult</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Old</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Buffalo</td>
<td>-</td>
<td>F</td>
<td>Calf hood</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Sub -adult</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td>M</td>
<td>Adult</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Old</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Grand Total</td>
<td>22</td>
<td>F-16</td>
<td>Calf hood</td>
<td>1</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Sub -adult</td>
<td>11</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>M-6</td>
<td>Adult</td>
<td>10</td>
<td>-</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>Old</td>
<td>-</td>
<td>2</td>
</tr>
</tbody>
</table>
### Table-49: Institutional survey on the recorded incidence of bovine papillomatosis in 24 pargana (North) District, West Bengal

<table>
<thead>
<tr>
<th>Sl No</th>
<th>Name of the centre</th>
<th>Name of the farmer with address</th>
<th>O.P. No</th>
<th>Date</th>
<th>Category of animal</th>
<th>Gross pathological observations</th>
<th>Duration of infection</th>
<th>Remarks on severity of affections &amp; treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>BAHC, Barasat-II</td>
<td>Tulsi Ram Ghosh, Vill-Shimulia</td>
<td>4671/08</td>
<td>20.01.12</td>
<td>CBJ HF-1, 2 years</td>
<td>Round dome shaped warts with undulating surface on head, neck and back, 2-3 cm, n&gt;20</td>
<td>6 months</td>
<td>+++, Moderate, Inj. Anthiomaline</td>
</tr>
<tr>
<td>2</td>
<td>BAHC, Barasat-II</td>
<td>Tulsi Ram Ghosh, Vill-Shimulia</td>
<td>467209</td>
<td>20.01.12</td>
<td>CBJ FC-1, 9 Months</td>
<td>Small nodular warts (3-5 cm) all around the face and neck, n&gt;15</td>
<td>3 months</td>
<td>+++, Moderate, Auto hemo therapy</td>
</tr>
<tr>
<td>3</td>
<td>BAHC, Barasat-II</td>
<td>Lalbanu Bibi Nababpur</td>
<td>6419/24</td>
<td>29.02.12</td>
<td>ND FC-1, 10 Months</td>
<td>Multiple squat type warts, all around the eyes and belly, 2-3 cm, n&gt;20</td>
<td>3 Months</td>
<td>+++, Moderate, Thuja orally</td>
</tr>
<tr>
<td>4</td>
<td>BAHC, Barasat-II</td>
<td>Lalbanu Bibi Nababpur</td>
<td>6420/25</td>
<td>29.02.12</td>
<td>CBJ HF-1, 2.5 years</td>
<td>Small cauliflower like warts, with scattered distribution on back, chest and hind limbs, 2-2.5 cm, n&gt;20</td>
<td>4 Months</td>
<td>+++, Moderate, Inj. Ivermectin</td>
</tr>
<tr>
<td>5</td>
<td>BAHC, Swarupnagar Block</td>
<td>Sahara Banu, Vill-Solua</td>
<td>5563</td>
<td>22.03.12</td>
<td>CBJ HF-1, 2 years</td>
<td>Multiple cauliflower like warts, distributed on the fore limbs and belly, 1-2 cm, n&gt;30</td>
<td>5 months</td>
<td>++++, Moderate, Inj. Anthiomaline</td>
</tr>
<tr>
<td>6</td>
<td>BAHC, Swarupnagar Block</td>
<td>Haripada Ditta, Vill-Chorghat</td>
<td>5022</td>
<td>12.01.12</td>
<td>ND HF-1, 28 months</td>
<td>Multiple sessile type of warts on head, neck and trunk, 2-3 cm, n&gt;20</td>
<td>4 months</td>
<td>++++, moderate, Thuja orally</td>
</tr>
<tr>
<td>7</td>
<td>BAHC, Haroa Block</td>
<td>Hafijul Mollah Panditpole</td>
<td>3340</td>
<td>11.02.11</td>
<td>CBJ FC-1, 12 Months</td>
<td>Multiple cauliflower like warts on head, neck and fore limbs, 1-2 cm, n&gt;25</td>
<td>4 Months</td>
<td>++++, Moderate, Inj. Anthiomaline</td>
</tr>
<tr>
<td>8</td>
<td>BAHC, Haroa Block</td>
<td>Sofikul Mondal, Tiyara</td>
<td>633</td>
<td>02.06.11</td>
<td>ND HF-1, 18 months</td>
<td>Multiple cauliflower like warts, both the fore limbs including ventral abdomen, 1-2 cm, n&gt;30</td>
<td>4 Months</td>
<td>++++, moderate, Thuja orally</td>
</tr>
<tr>
<td>9</td>
<td>BAHC, Haroa Block</td>
<td>Abiza Bibi, Pilkhana</td>
<td>693</td>
<td>08.06.11</td>
<td>CBJ FC-1, 10 Months</td>
<td>Small round nodular warts, restricted to eyes and ears only, 3-5 cm, n = 7</td>
<td>2 Months</td>
<td>+, Mild, Thuja orally</td>
</tr>
<tr>
<td>10</td>
<td>BAHC, Haroa Block</td>
<td>Abdur Salam, Mallickpur</td>
<td>795</td>
<td>16.06.11</td>
<td>ND Cow-1, 3 Years</td>
<td>Multiple cauliflower like warts (3-4 cm), on neck, groin, axillae and udder, n&gt;30</td>
<td>6 Months</td>
<td>++++, Moderate, Auto hemotherapy and immunomodulation by Levamisole therapy</td>
</tr>
<tr>
<td>11</td>
<td>BAHC, Haroa Block</td>
<td>Md. Abdur Rouf, Ranigachi</td>
<td>836</td>
<td>22.06.11</td>
<td>ND HF-1, 24 months</td>
<td>Small (2-3 cm) round nodular warts on chest and left fore limb, n = 7</td>
<td>4 Months</td>
<td>+, Mild, Surgical excision</td>
</tr>
<tr>
<td>12</td>
<td>BAHC, Haroa Block</td>
<td>Sahera Bibi, Adam Pur</td>
<td>1373</td>
<td>29.07.11</td>
<td>ND MC-1, 10 Months</td>
<td>Multiple cauliflower like warts with a scattered distribution on face and neck, 1-2 cm, n&gt;30</td>
<td>4 Months</td>
<td>++++, Moderate, Auto hemotherapy and Thuja orally</td>
</tr>
<tr>
<td>Sl. No.</td>
<td>Village</td>
<td>Owner</td>
<td>Date</td>
<td>Breed</td>
<td>Age</td>
<td>Lesions Description</td>
<td>Duration</td>
<td>Treatment</td>
</tr>
<tr>
<td>--------</td>
<td>---------</td>
<td>-------</td>
<td>------</td>
<td>-------</td>
<td>-----</td>
<td>---------------------</td>
<td>----------</td>
<td>-----------</td>
</tr>
<tr>
<td>13</td>
<td>BAHC, Haroa Block</td>
<td>Jabbar Ali, Champatala</td>
<td>02.07.12</td>
<td>CBJ Bull-1, 2.5 Years</td>
<td>Multiple cauliflower like warts on hip region and hind limbs in clustered form, 1-2 cm, &gt;30</td>
<td>4 Months</td>
<td>+++, Moderate, Autohemotherapy and Thuja orally</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>BAHC, Ghola, Bhatpara Block</td>
<td>Munna Lahiri, Kankinara</td>
<td>23.03.12</td>
<td>ND MC-1, 11 Months</td>
<td>Small cauliflower like warts (3-5 cm) on face, neck, dewlap and brisket, &gt;20</td>
<td>5 months</td>
<td>+++, Moderate, Inj. Anthiomaline</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>BAHC, Ghola, Bhatpara Block</td>
<td>Hira Harijan, Thakurganj</td>
<td>26.03.12</td>
<td>Gir cow-1, 4 years</td>
<td>Rice grain type teat warts (1-3 cm) affecting all four teats, &gt;10</td>
<td>6 Months</td>
<td>+++, Moderate, Thuja orally and Inj. Ivermectin</td>
<td></td>
</tr>
</tbody>
</table>
Table 50: Breed, age group and sex wise synopsis of cutaneous wart (CWT) and teat papilloma (TP) in cattle and buffalo recorded in veterinary clinics in the district of North 24 Parganas

<table>
<thead>
<tr>
<th>Breeds affected</th>
<th>Total No. of recorded wart cases</th>
<th>Ssex</th>
<th>Age group</th>
<th>No of CWT cases</th>
<th>No of TP cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indigenous and non-descript cattle</td>
<td>8</td>
<td>F-6</td>
<td>Calf hood</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td></td>
<td>M-2</td>
<td>Sub-adult</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Cross breed cattle (CBJ)</td>
<td>7</td>
<td>F-6</td>
<td>Adult</td>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td></td>
<td>M-1</td>
<td>Old</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Pure exotic cattle</td>
<td>-</td>
<td>F</td>
<td></td>
<td>-</td>
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</tr>
<tr>
<td></td>
<td></td>
<td>M</td>
<td></td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Cross breed cattle (HLX)</td>
<td>-</td>
<td>F</td>
<td></td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td>M</td>
<td></td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Buffalo</td>
<td>-</td>
<td>F</td>
<td></td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td>M</td>
<td></td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Grand Total</td>
<td>15</td>
<td>F-12</td>
<td></td>
<td>6</td>
<td>14</td>
</tr>
<tr>
<td></td>
<td></td>
<td>M-3</td>
<td></td>
<td>7</td>
<td>1</td>
</tr>
</tbody>
</table>
Table-51: Institutional survey on the recorded incidence of bovine papillomatosis in 24 pargana (South) District, West Bengal

<table>
<thead>
<tr>
<th>Sl No</th>
<th>Name of the centre</th>
<th>Name of the farmer</th>
<th>O.P. No</th>
<th>Date</th>
<th>Category of animal</th>
<th>Gross pathological observations</th>
<th>Duration of infection</th>
<th>Remarks on severity of affections &amp; treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>BAHC Mathurapur-1 24 Pargana (S)</td>
<td>Suresh Purokait</td>
<td>39</td>
<td>5.4.2010</td>
<td>Zebu MC-1, 9 Months</td>
<td>Cluster of warts (3-4 cm) around the eyes and ears, n&gt;20</td>
<td>3 Months</td>
<td>Moderate, ++++, Auto-hemotherapy</td>
</tr>
<tr>
<td>2</td>
<td>BAHC Mathurapur-1 24 Pargana (S)</td>
<td>Mihir Sardar</td>
<td>24</td>
<td>11.4.2011</td>
<td>CBJ Cow-1, 4 years</td>
<td>A big sized (6 cm diameter) pedunculated wart on brisket and multiple small (1-2 cm diameter) papulo-nodules around eyes and neck, n&gt;50</td>
<td>6 months</td>
<td>Severe, ++++, Thuja orally and surgical excision of the big one</td>
</tr>
<tr>
<td>3</td>
<td>BAHC Mathurapur-1 24 Pargana (S)</td>
<td>Ranjan Pailan</td>
<td>8</td>
<td>27.12.2011</td>
<td>CBJ COW-1, 3 Years</td>
<td>Warts on posterior part of the body, mainly on medial aspect of the thigh, distal part of the limbs and axilla, n&gt;30</td>
<td>7 months</td>
<td>Moderate, ++++, Inj. Ivermectin</td>
</tr>
<tr>
<td>4</td>
<td>BAHC Mathurapur-1 24 Pargana (S)</td>
<td>Subodh Mirja</td>
<td>9</td>
<td>23.2.2012</td>
<td>CBJ HF-1, 18 Months</td>
<td>Cutaneous warts (3-4cm) on gluteal region and axilla, n = 7</td>
<td>5 Months</td>
<td>Mild, +, Surgical excision</td>
</tr>
<tr>
<td>5</td>
<td>BAHC Kulpi 24 Pargana (S)</td>
<td>Asgar Ali</td>
<td>2382</td>
<td>29.11.2011</td>
<td>ND MC-1, 10 Months</td>
<td>Numerous warts on fore limbs(lower parts) and scattered lesions all over the body, n&gt;100</td>
<td>4 months</td>
<td>Severe, ++++, Inj. Anthiomaline</td>
</tr>
<tr>
<td>6</td>
<td>BAHC Kulpi 24 Pargana (S)</td>
<td>Afroja Bibi</td>
<td>3157</td>
<td>22.2. 2012</td>
<td>CBJ Cow-1, 4 years</td>
<td>Rice grain and pin head shaped tiny warts on hairless part of the mammary gland, n = 16</td>
<td>6 months</td>
<td>Moderate, ++++, Inj. Anthiomaline</td>
</tr>
<tr>
<td>7</td>
<td>BAHC Kulpi 24 Pargana (S)</td>
<td>Amal Mondal</td>
<td>3467</td>
<td>29.3.2012</td>
<td>CBJ HF-1, 24 months</td>
<td>Lavish warty growths on limbs and neck, n&gt;50</td>
<td>6 months</td>
<td>Severe, ++++, Autohemotherapy and Thuja orally</td>
</tr>
<tr>
<td>8</td>
<td>BAHC Kulpi 24 Pargana (S)</td>
<td>Rajen Das</td>
<td>443</td>
<td>6.4.2010</td>
<td>CBJ HF-1, 2.5 Years</td>
<td>Cutaneous warts (CWTs) around the eyes and fore limbs, n&gt;20</td>
<td>3 Months</td>
<td>Moderate, +++ Auto-hemo therapy</td>
</tr>
<tr>
<td>9</td>
<td>BAHC Kulpi 24 Pargana (S)</td>
<td>Ashoke Mondal</td>
<td>1057</td>
<td>12.6.2011</td>
<td>ND Cow-1, 4 Years</td>
<td>Rice grain type warts on all four teats, n&gt;10</td>
<td>5 Months</td>
<td>Moderate, +++, Thuja orally</td>
</tr>
<tr>
<td>10</td>
<td>BAHC Kulpi 24 Parganas (S)</td>
<td>SK. Nazimul</td>
<td>3456</td>
<td>21.2.2012</td>
<td>HLX Cow-1, 4 years</td>
<td>Rice grain type warts on all four teats, n=10</td>
<td>4 Months</td>
<td>Moderate, +++, Thuja orally</td>
</tr>
<tr>
<td>11</td>
<td>BAHC Kulpi 24 Parganas (S)</td>
<td>Sital Ghosh</td>
<td>3897</td>
<td>5.3.2012</td>
<td>MB HF-1, 3 Years</td>
<td>Cauliflower like warts on back and fore limbs, n = 8</td>
<td>5 Months</td>
<td>Mild, +, Inj. Anthiomaline</td>
</tr>
</tbody>
</table>
Table-52: Breed age group and sex wise synopsis of cutaneous wart (CWT) and teat papilloma (TP) in cattle and buffalo recorded in Veterinary clinics in the District of South 24 Pargana

<table>
<thead>
<tr>
<th>Breeds affected</th>
<th>Total No. of wart cases</th>
<th>Sex</th>
<th>Age group</th>
<th>No of CWT cases</th>
<th>No of TP cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indigenous and non-descript cattle</td>
<td>3</td>
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<td>Calf hood</td>
<td>1</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td>F-1</td>
<td>Sub-adult</td>
<td>-</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>M-2</td>
<td>Adult</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Cross breed cattle (CBJ)</td>
<td>6</td>
<td></td>
<td>Old</td>
<td>-</td>
<td>N/A</td>
</tr>
<tr>
<td></td>
<td></td>
<td>F-6</td>
<td>Calf hood</td>
<td>-</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td></td>
<td>M</td>
<td>Sub-adult</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>Pure exotic cattle</td>
<td>-</td>
<td></td>
<td>Adult</td>
<td>3</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td>F</td>
<td>Old</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td>M</td>
<td>Sub-adult</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Cross breed cattle (HLX)</td>
<td>1</td>
<td></td>
<td>Adult</td>
<td>1</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td>F-1</td>
<td>Sub-adult</td>
<td>-</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>M</td>
<td>Adult</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Buffalo</td>
<td>1</td>
<td></td>
<td>Sub-adult</td>
<td>1</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td>F-1</td>
<td>Adult</td>
<td>-</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>M</td>
<td>Old</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td>F-9</td>
<td>Calf hood</td>
<td>2</td>
<td>8</td>
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<tr>
<td></td>
<td></td>
<td>M-2</td>
<td>Sub-adult</td>
<td>4</td>
<td>3</td>
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<tr>
<td>Grand Total</td>
<td>11</td>
<td></td>
<td>Adult</td>
<td>5</td>
<td>-</td>
</tr>
</tbody>
</table>

Results | 213
Table-53: Institutional survey on the recorded incidence of bovine papillomatosis in Hooghly District of West Bengal

<table>
<thead>
<tr>
<th>Sl No</th>
<th>Name of the centre</th>
<th>Name of the farmer</th>
<th>O.P. No</th>
<th>Date</th>
<th>Category of animal</th>
<th>Gross pathological observations</th>
<th>Duration of infection</th>
<th>Remarks on severity of affections</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>BAHC, Singur</td>
<td>Ratan Patra</td>
<td>572</td>
<td>25.07.11</td>
<td>CBJ Cow-1, 4 years</td>
<td>Multiple sessile type of warts (n = 32) disseminated on head, neck and belly</td>
<td>6 months</td>
<td>++++, Moderate, Autohemotherapy adopted</td>
</tr>
<tr>
<td>2</td>
<td>BAHC, Singur</td>
<td>Pulim Hore</td>
<td>622</td>
<td>28.07.11</td>
<td>ND Cow-1, 3 Years</td>
<td>Multiple squat type of warts (n = 34) on ventral abdomen and axilla (4-6 cm in diameter)</td>
<td>5 months</td>
<td>++++, Moderate, Autohemotherapy adopted</td>
</tr>
<tr>
<td>3</td>
<td>BAHC, Singur</td>
<td>Biva Malik</td>
<td>772</td>
<td>27.08.11</td>
<td>ND HF-1, 2 years</td>
<td>Whole body papillomatosis (n = 56) with club-shaped outgrowths</td>
<td>7 months</td>
<td>++++, Severe, Autohemotherapy And levamisol orally</td>
</tr>
<tr>
<td>4</td>
<td>BAHC, Jangipara</td>
<td>Ratan Patra</td>
<td>1186</td>
<td>14.07.10</td>
<td>CBJ HF-1, 2 years</td>
<td>Multiple sessile type warts (n = 20) on head, neck and thorax</td>
<td>6 months</td>
<td>++++, Moderate, Inj. Anthiomaline tried</td>
</tr>
<tr>
<td>5</td>
<td>BAHC, Jangipara</td>
<td>Najrul Islam</td>
<td>2392</td>
<td>07.10.10</td>
<td>ND Cow-1, 4 years</td>
<td>Diffuse frond type warts (n = 9) on teats</td>
<td>6 months</td>
<td>+, Mild Thuja orally</td>
</tr>
<tr>
<td>6</td>
<td>BAHC, Jangipara</td>
<td>Bablu Rhuibdas</td>
<td>3820</td>
<td>24.01.11</td>
<td>CBJ Cow-1, 3 years</td>
<td>Diffuse squat type warts (n = 12) on axilla</td>
<td>5 months</td>
<td>++++, Moderate, Inj. Anthiomaline tried</td>
</tr>
<tr>
<td>7</td>
<td>BAHC, Jangipara</td>
<td>Sagari Gorui</td>
<td>1508</td>
<td>06.08.2011</td>
<td>CBJ HF-1, 2 years</td>
<td>Multiple edulated warts (n = 25) on head, neck and belly</td>
<td>6 months</td>
<td>++++, Moderate, Autohemotherapy adopted</td>
</tr>
<tr>
<td>8</td>
<td>BAHC, Tarakeswar</td>
<td>Subhan Khetob</td>
<td>3198</td>
<td>13.02.2010</td>
<td>CBJ HF-1, 2.5 years</td>
<td>Whole body papillomatosis (n = 60) with small cauliflower like lesions</td>
<td>7 months</td>
<td>++++, Severe/complicated, Autohemotherapy</td>
</tr>
<tr>
<td>9</td>
<td>BAHC, Tarakeswar</td>
<td>Hemal Sarkar</td>
<td>3682</td>
<td>31.03.2011</td>
<td>CBJ HF-1, 2 years</td>
<td>Whole body papillomatosis (n&gt;50)</td>
<td>6 months</td>
<td>++++, Severe/ complicated, Autohemotherapy</td>
</tr>
<tr>
<td>10</td>
<td>ABAHC,Gurup, Dhanekhaly, Hooghly</td>
<td>Sonu Mandy Satidaha</td>
<td>1446</td>
<td>07.09.2011</td>
<td>Gir cow-1, 3 years</td>
<td>Cauliflower like warts (n =20) on neck and thorax</td>
<td>4 months</td>
<td>++++, Moderate Inj. Ivermectin tried</td>
</tr>
<tr>
<td>11</td>
<td>ABAHC,Gurup, Dhanekhaly, Hooghly</td>
<td>Joydip Patra Satidaha</td>
<td>1988</td>
<td>10.10.2011</td>
<td>ND Cow-1, 4 years</td>
<td>Multiple squat type of warts (n = 21) on ventral abdomen and axilla</td>
<td>7 months</td>
<td>++++, Moderate Levamisole orally</td>
</tr>
<tr>
<td>12</td>
<td>ABAHC,Gurup, Dhanekhaly, Hooghly</td>
<td>Mukti Pandit Hassampur</td>
<td>1989</td>
<td>10.10.2011</td>
<td>CBJ HF-1, 2.0 years</td>
<td>Multiple pedunculated warts (n =32) on head, neck and belly</td>
<td>7 months</td>
<td>++++, Moderate Autohemotherapy tried</td>
</tr>
<tr>
<td>No.</td>
<td>Location</td>
<td>Full Name</td>
<td>Plate No.</td>
<td>Date</td>
<td>Breed</td>
<td>Age</td>
<td>Description</td>
<td>Therapy</td>
</tr>
<tr>
<td>-----</td>
<td>-------------------</td>
<td>-----------</td>
<td>-----------</td>
<td>----------</td>
<td>---------</td>
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<td>------------------------------------------------------------------------------------------------</td>
<td>----------------------------------</td>
</tr>
<tr>
<td>13</td>
<td>ABAHC, Gurup, Dhanekhaly, Hooghly</td>
<td>Sanat Santra Gurup</td>
<td>2399</td>
<td>19.11.2011</td>
<td>CBJ HF-1, 2.5 years</td>
<td>Multiple sessile type warts (n=21) on face, neck and back</td>
<td>5 months, ++++, Moderate Thuja oral therapy as remedy</td>
<td>5 months</td>
</tr>
<tr>
<td>14</td>
<td>ABAHC, Gurup, Dhanekhaly, Hooghly</td>
<td>Ajit Ghosh Gurup</td>
<td>2697</td>
<td>06.02.2012</td>
<td>ND Cow-1, 3 years</td>
<td>Multiple pedunculated warts (n = 16) on head, neck and back</td>
<td>5 months, ++++, Moderate Inj. Ivermectin tried</td>
<td>5 months</td>
</tr>
<tr>
<td>15</td>
<td>ABAHC, Gurup, Dhanekhaly, Hooghly</td>
<td>Bimal Porel Gurup</td>
<td>2526</td>
<td>05.03.2012</td>
<td>CBJ HF-1, 2.5 years</td>
<td>Medium sized warts (n = 12) on ears, eyelids, neck and trunk</td>
<td>5 months, ++++, Moderate, Autohemotherapy adopted</td>
<td>5 months</td>
</tr>
<tr>
<td>16</td>
<td>ABAHC, Gurup, Dhanekhaly, Hooghly</td>
<td>Umapada Ghosh, Gopinathpur</td>
<td>3155</td>
<td>05.06.2012</td>
<td>ND Cow-1, 3.5 years</td>
<td>Medium sized warts (n = 12) on ears, eyelids, neck and back</td>
<td>5 months, ++++, Moderate, Inj. Anthiomaline administered</td>
<td>5 months</td>
</tr>
<tr>
<td>17</td>
<td>BAHC, Pandua, Hooghly</td>
<td>Kader Ali Kalbazar</td>
<td>1940</td>
<td>13.11.10</td>
<td>Gir cow-1, 3 years</td>
<td>Cauliflower like warts (n = 20) on face, neck and thorax</td>
<td>4 months, ++++, Moderate, Inj. Anthiomaline</td>
<td>4 months</td>
</tr>
<tr>
<td>18</td>
<td>BAHC, Pandua, Hooghly</td>
<td>Liakat Ali Balihata</td>
<td>1071</td>
<td>31.08.10</td>
<td>CBJ HF-1, 2.5 years</td>
<td>Multiple sessile type warts (n=21) on face, eye lids, neck and back</td>
<td>5 Months, ++++, Moderate, Inj. Anthiomaline</td>
<td>5 Months</td>
</tr>
<tr>
<td>19</td>
<td>BAHC, Jangipara</td>
<td>Ratan Patra Ajodhya</td>
<td>1186</td>
<td>14.07.10</td>
<td>ND HF-1, 18 Months</td>
<td>Small and medium sized warts (n=22) on ears, eyelids, neck and trunk</td>
<td>5 months, ++++, Moderate, Inj. Anthiomaline</td>
<td>5 months</td>
</tr>
<tr>
<td>20</td>
<td>BAHC, Jangipara</td>
<td>Najrul Islam Kuntukpur</td>
<td>2392</td>
<td>07.10.10</td>
<td>ND Cow-1, 3.0 years</td>
<td>Extensive lesions on fore limbs, chest and barrel, n&gt;40</td>
<td>5 months, ++++, Moderate, Auto hemotherapy</td>
<td>5 months</td>
</tr>
<tr>
<td>21</td>
<td>BAHC, Jangipara</td>
<td>Bablu Ruhidas Ajodhya</td>
<td>3820</td>
<td>24.01.11</td>
<td>CBJ HF-1, 2.5 years</td>
<td>Multiple cauliflower like pedunculated warts (n&gt;30) on head, neck, fore limbs and back</td>
<td>4 months, ++++, Moderate, Inj. Anthiomaline</td>
<td>4 months</td>
</tr>
<tr>
<td>22</td>
<td>BAHC, Jangipara</td>
<td>Sagari Ghorui Tarajol</td>
<td>1508</td>
<td>06.08.11</td>
<td>CBJ HF-1, 2 years</td>
<td>Whole body papillomatosis with small diffuse nodular lesions, n&gt;100</td>
<td>6 Months, ++++, Moderate, Inj. Anthiomaline</td>
<td>6 Months</td>
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</table>
Table-54: Breed age group and sex wise synopsis of cutaneous wart (CWT) and teat papilloma (TP) in cattle and buffalo recorded in Veterinary clinics in the District of Hooghly

<table>
<thead>
<tr>
<th>Breeds affected</th>
<th>Total No. of wart cases</th>
<th>Sex</th>
<th>Age group</th>
<th>No of CWT cases</th>
<th>No of TP cases</th>
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<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Calf hood</td>
<td>Sub-adult</td>
<td>Adult</td>
</tr>
<tr>
<td>Indigenous and non-descript cattle</td>
<td>10</td>
<td>F-10</td>
<td>-</td>
<td>3</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td></td>
<td>M</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Cross breed cattle (CBJ)</td>
<td>12</td>
<td>F-12</td>
<td>-</td>
<td>10</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>M-0</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Pure exotic cattle</td>
<td>-</td>
<td>F</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td>M</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Cross breed cattle (HLX)</td>
<td>-</td>
<td>F</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td>M</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Buffalo</td>
<td>-</td>
<td>F</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td>M</td>
<td>-</td>
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</tr>
<tr>
<td>Grand Total</td>
<td>22</td>
<td>F-12</td>
<td>-</td>
<td>13</td>
<td>9</td>
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<td>M-0</td>
<td>-</td>
<td>-</td>
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</table>
Table-55: Institutional survey on the recorded incidence of bovine papillomatosis in Murshidabad District, West Bengal

<table>
<thead>
<tr>
<th>Sl No</th>
<th>Name of the centre</th>
<th>Name of the farmer</th>
<th>O.P. No</th>
<th>Date</th>
<th>Category of animal</th>
<th>Grosspathological observations</th>
<th>Duration of infection</th>
<th>Remarkson severity of affections</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>BAHC, Aurangabad, Suti-II Block</td>
<td>Toimur Hossain Vill- Shes Pur</td>
<td>1920/8</td>
<td>01.12.11</td>
<td>Indigenous HF-1, 2 years</td>
<td>Low, flat, sessile type warts (3-4 cm diameter) with rough surface on head, neck and brisket: n=16</td>
<td>4 months</td>
<td>++++, Moderate Thuja orally tried</td>
</tr>
<tr>
<td>2</td>
<td>BAHC, Aurangabad, Suti-II Block</td>
<td>Enamul Sk. Vill-Dihgram</td>
<td>1685/5</td>
<td>28.11.11</td>
<td>CBJ Cow-1, 3 years</td>
<td>Bunch of grapes like warts on right lower neck : n=15</td>
<td>6 months</td>
<td>++++,Moderate Inj. Anthiomaline tried</td>
</tr>
<tr>
<td>3</td>
<td>BAHC, Aurangabad, Suti-II Block</td>
<td>Janta Sk. VillJogtai</td>
<td>1748/18</td>
<td>16.11.11</td>
<td>ND MC-1, 10 Months</td>
<td>Round, pedunculated warts on fore limbs: n=12</td>
<td>5 months</td>
<td>++++, Moderate Autohemotherapy</td>
</tr>
<tr>
<td>4</td>
<td>BAHC, Aurangabad, Suti-II Block</td>
<td>Sk. Azad Vill- Dihi gram</td>
<td>1479/11</td>
<td>10.2011</td>
<td>ND Cow-1, 5 years</td>
<td>Small, round, dome shaped warts on all four teats ,n=14</td>
<td>6 months</td>
<td>++++, Moderate Inj. Ivermectin tried</td>
</tr>
<tr>
<td>5</td>
<td>BAHC, Aurangabad, Suti-II Block</td>
<td>Samir Ghosh Vill -Joptai</td>
<td>2548/7</td>
<td>04.03.11</td>
<td>Murrah Buffalo-1, 5 years</td>
<td>Warts with orny papillae and few with lateral branches located on peri anal region, n=10</td>
<td>5 months</td>
<td>++++,Moderate Inj. Anthiomaline tried</td>
</tr>
<tr>
<td>6</td>
<td>BAHC, Aurangabad, Suti-II Block</td>
<td>Madan Singha Vill-Jogpai</td>
<td>2242/7</td>
<td>07.02.11</td>
<td>CBJ Cow, 3 years</td>
<td>Flat, diffuse type warts with rough surface on teats and udder : n=12</td>
<td>6 months</td>
<td>++++, Moderate Inj. Ivermectin tried</td>
</tr>
<tr>
<td>7</td>
<td>BAHC, Aurangabad, Suti-II Block</td>
<td>Molin Rajak Vill -Jogpai</td>
<td>1744/15</td>
<td>16.12.10</td>
<td>ND Cow, 4 years</td>
<td>Rice grain type warts on rear teats : n=12</td>
<td>5 months</td>
<td>++++, Moderate Inj. Ivermectin tried</td>
</tr>
<tr>
<td>8</td>
<td>BAHC, Habarpara Block</td>
<td>Kajol Sekh Beharia</td>
<td>2938</td>
<td>23.03.11</td>
<td>ND MC, 9 Months</td>
<td>Small cauli flower like warts (3-4 cm) on both sides of the neck and all four legs: n=16</td>
<td>5 months</td>
<td>++++,Moderate Inj. Anthiomaline tried</td>
</tr>
<tr>
<td>9</td>
<td>BAHC, Habarpara Block</td>
<td>Nurjahana Bibi Nowda</td>
<td>2945</td>
<td>25.03.11</td>
<td>Graded Gir Heifer, 2.6 years</td>
<td>Round nodular, pedunculated warts on face, neck and back : n=12</td>
<td>6 months</td>
<td>++++, Moderate Thuja orally</td>
</tr>
<tr>
<td>10</td>
<td>BAHC, Habarpara Block</td>
<td>Osman Mandal Babola</td>
<td>3002</td>
<td>30.03.11</td>
<td>CBJ Cow, 3 years</td>
<td>Flat, diffuse type warts with rough surface around genital region : n = 12</td>
<td>6 months</td>
<td>++++,Moderate Inj. Anthiomaline tried</td>
</tr>
<tr>
<td>11</td>
<td>BAHC, Nabagram Block</td>
<td>Alim Shekh Molurul</td>
<td>2683</td>
<td>20.07.12</td>
<td>MB FC-1, 11 Months</td>
<td>Cauliflower like warts in cluster on inner aspect of left thigh, n = 6</td>
<td>6 months</td>
<td>+,Mild Surgical cure</td>
</tr>
<tr>
<td>12</td>
<td>BAHC, Nabagram Block</td>
<td>Sasti Margri Nabagram</td>
<td>3174</td>
<td>13.08.12</td>
<td>ND FC-1, 9 Months</td>
<td>Horny warts in cluster on ear base, neck and brisket, n = 12</td>
<td>3 months</td>
<td>++++, Moderate Thuja orally</td>
</tr>
<tr>
<td>13</td>
<td>BAHC, Nabagram Block</td>
<td>Fazu Shek Silgram</td>
<td>3501</td>
<td>31.08.12</td>
<td>CBJ Cow-1, 4 years</td>
<td>Rice grain type warts on teats, n = 18</td>
<td>5 months</td>
<td>++++,Moderate Inj. Ivermectin</td>
</tr>
<tr>
<td>14</td>
<td>BAHC, Nabagram Block</td>
<td>Ujjwal Ghosh</td>
<td>2861</td>
<td>21.09.12</td>
<td>ND FC-1, 11 Months</td>
<td>Round, nodular warts with rough surface on ear tips, around the eyes and dewlap : n = 12</td>
<td>5 months</td>
<td>++++, Moderate Thuja orally</td>
</tr>
<tr>
<td></td>
<td>Results</td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>15</td>
<td>BAHC, Nabagram Block</td>
<td>Ramjan Sekh</td>
<td>Khojordanga</td>
<td>2934</td>
<td>25.09.12</td>
<td>ND BK-1, 4 Years</td>
<td>Cauliflower like warts in cluster around the anus, n = 8</td>
<td>5 months</td>
</tr>
<tr>
<td>16</td>
<td>ABAHC, Nowda</td>
<td>Giasuddin SK</td>
<td>Amtala</td>
<td>6559</td>
<td>10.12.11</td>
<td>CBJ Cow-1, 3 years</td>
<td>Small (1-2 cm) tumors on the teats and multiple globooid tumours of different sizes (3-4cm) located along the ventral abdomen , n&gt;20</td>
<td>3 months</td>
</tr>
<tr>
<td>17</td>
<td>ABAHC, Nowda</td>
<td>Debod Ghosh</td>
<td>Dubtala</td>
<td>6081</td>
<td>18.11.11</td>
<td>HLX Cow-1, 3 Years</td>
<td>Big sized (5-6 cm diameter) warts (lemon shaped) on the neck and belly, n = 6</td>
<td>4 months</td>
</tr>
<tr>
<td>18</td>
<td>ABAHC, Nowda</td>
<td>Rofik Mondal</td>
<td>Salika Danga</td>
<td>6344</td>
<td>28.11.11</td>
<td>Gir MC-1, 13 Months</td>
<td>Cauliflower like warts on, head, neck and periorbital area, n = 8</td>
<td>3 months</td>
</tr>
<tr>
<td>19</td>
<td>ABAHC, Nowda</td>
<td>Ripon SK</td>
<td>Raipur</td>
<td>1609</td>
<td>20.06.12</td>
<td>HLX Cow-1, 3 Years</td>
<td>Numerous round, dome shaped warts on right shoulder and face, n&gt;30</td>
<td>6 months</td>
</tr>
<tr>
<td>20</td>
<td>ABAHC, Nowda</td>
<td>Sundari Sarkar, Salikadanga</td>
<td>2471</td>
<td>18.07.12</td>
<td>CBJ FC-, 12 Months</td>
<td>Multiple (n&gt;15) spheroid to conical warts on head, limbs and trunk</td>
<td>7 months</td>
<td>+++, Moderate Thuja orally</td>
</tr>
<tr>
<td>21</td>
<td>ABAHC, Nowda</td>
<td>Adhir Mandal, Sanokda</td>
<td>3034</td>
<td>8.08.12</td>
<td>CBJ FC-1, 10 Months</td>
<td>Small (2-3 cm) cauliflower like warts on eyes, ears and neck, n&gt;30</td>
<td>4 months</td>
<td>+++, Moderate Inj. Ivermectin tried</td>
</tr>
<tr>
<td>22</td>
<td>ABAHC, Nowda</td>
<td>Hasem Mondal, Raipur</td>
<td>4461</td>
<td>1.01.12</td>
<td>CBJ Cow-1, 4 years</td>
<td>Round, dome shaped small warts on hind teats, n&gt;10</td>
<td>4 months</td>
<td>+++, Moderate Autohemo therapy</td>
</tr>
<tr>
<td>23</td>
<td>ABAHC, Nowda</td>
<td>Monir Biswas, Rajneja</td>
<td>4666</td>
<td>19.11.12</td>
<td>ND FC-1, 9 Months</td>
<td>Multiple large sized warts (4-5 cm) on left side of the abdomen and left hind limb</td>
<td>6 months</td>
<td>+++, Moderate Inj. Anthiomaline tried</td>
</tr>
<tr>
<td>24</td>
<td>ABAHC, Nowda</td>
<td>Abul Kalam, Durlovpur</td>
<td>5017</td>
<td>17.12.12</td>
<td>HLX Cow-1, 3 Years</td>
<td>Round, dome shaped small warts (2-3 cm) on hind teats, n&gt;10</td>
<td>7 months</td>
<td>+++, Moderate Thuja orally</td>
</tr>
<tr>
<td>25</td>
<td>BAHC, Beharrampur</td>
<td>Nemai Mondal, Sibpur</td>
<td>2693</td>
<td>25.11.10</td>
<td>CBJ MC-1,11 months</td>
<td>Extensive warts affecting all four limbs and barrel , n&gt;50</td>
<td>4 months</td>
<td>++++, Severe Autohemo therapy tried</td>
</tr>
<tr>
<td>26</td>
<td>BAHC, Beharrampur</td>
<td>Amin Oraon, Madapur</td>
<td>1670</td>
<td>15.07.11</td>
<td>HLX Cow-1, 4 Years</td>
<td>Small cauliflower like warts on uddder and dome shaped warts on all four teats, n&gt;20</td>
<td>5 months</td>
<td>+++, Moderate Thuja oral therapy</td>
</tr>
<tr>
<td>27</td>
<td>BAHC, Kandi</td>
<td>Anadi Mondal, Purandarpur</td>
<td>1211</td>
<td>11.10.10</td>
<td>ND HF-1, 3 Years</td>
<td>Multiple nodular warts on thigh, buttokcs, shoulder and neck, n = 15</td>
<td>4 months</td>
<td>+++, Moderate Thuja oral therapy</td>
</tr>
<tr>
<td>28</td>
<td>BAHC, Kandi</td>
<td>Sisir Ghosh, Andulia</td>
<td>1426</td>
<td>13.11.10</td>
<td>CBJ FC-1, 11 Months</td>
<td>Whole body papillomatosis with small (1-3 cm in diameter) scattered nodular lesions, n&gt;100,</td>
<td>6 months</td>
<td>++++, Severe Levamisole orally and autohemotherapy tried</td>
</tr>
</tbody>
</table>
Table-56: Breed, age group and sex wise synopsis of cutaneous wart (CWT) and teat papilloma (TP) in cattle and buffalo recorded in Veterinary clinics in Murshidabad District

<table>
<thead>
<tr>
<th>Breeds affected</th>
<th>TotalNo. of recorded wart cases</th>
<th>Sex</th>
<th>Age group</th>
<th>No of CWT cases</th>
<th>No of TP cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indigenous and non-descript cattle</td>
<td>12</td>
<td>F-8</td>
<td>3</td>
<td>3</td>
<td>14</td>
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<tr>
<td></td>
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<td>2</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td></td>
<td>M-4</td>
<td>-</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>Cross breed cattle (CBJ)</td>
<td>10</td>
<td>F-9</td>
<td>3</td>
<td>-</td>
<td>6</td>
</tr>
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<td></td>
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<td>6</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>M-1</td>
<td>1</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Pure exotic cattle</td>
<td>-</td>
<td>F</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td>M</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Cross breed cattle (HLX)</td>
<td>4</td>
<td>F-4</td>
<td>-</td>
<td>4</td>
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<td></td>
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<td></td>
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<td>M</td>
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<td></td>
<td></td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Buffalo</td>
<td>2</td>
<td>F-2</td>
<td>1</td>
<td>-</td>
<td>2</td>
</tr>
<tr>
<td></td>
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<td>1</td>
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<tr>
<td></td>
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<td>M</td>
<td>-</td>
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<tr>
<td></td>
<td></td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Grand Total</td>
<td>28</td>
<td>F-23</td>
<td>11</td>
<td>3</td>
<td>21</td>
</tr>
<tr>
<td></td>
<td></td>
<td>M-5</td>
<td>3</td>
<td>14</td>
<td>7</td>
</tr>
</tbody>
</table>

Results | 219
Table 57: Institutional survey on the recorded incidence of bovine papillomatosis in Darjeeling District, West Bengal

<table>
<thead>
<tr>
<th>Sl No</th>
<th>Name of the centre</th>
<th>Name of the farmer</th>
<th>O.P. No</th>
<th>Date</th>
<th>Category of animal</th>
<th>Gross pathological observations</th>
<th>Duration of infection</th>
<th>Remarkson severity of affections and treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>BAHC, Pedong, Kalimpong-2</td>
<td>Kuley Gurung</td>
<td>182</td>
<td>24.06.2011</td>
<td>Local hilly Heifer, 2 years</td>
<td>Numerous lesions on back, thigh and distal part of hind limbs</td>
<td>6 months</td>
<td>Moderate, ++++, Inj. Anthiomaline tried</td>
</tr>
<tr>
<td>2</td>
<td>BAHC, Pedong, Kalimpong-2</td>
<td>Jyongti Maya Rai</td>
<td>184</td>
<td>24.06.2011</td>
<td>Darjeeling hill cow, 4 years</td>
<td>Multiple, small (2-3 cm) dome shaped warts on teats and udder, n&gt;20</td>
<td>4 months</td>
<td>Moderate, ++++, Inj. Anthiomaline tried</td>
</tr>
<tr>
<td>3</td>
<td>BAHC, Pedong, Kalimpong-2</td>
<td>Mdhu Rai</td>
<td>516</td>
<td>06.02.2012</td>
<td>Local ND FC-1, 9 months</td>
<td>Hard morbid growths on neck and fore limbs</td>
<td>3 Months</td>
<td>Moderate, ++++, Thuja orally</td>
</tr>
<tr>
<td>4</td>
<td>BAHC, Mirik DGHC, Darjeeling</td>
<td>G. Pradhan, Mirik</td>
<td>1881</td>
<td>05.01.2011</td>
<td>Local hilly Heifer, 2 years</td>
<td>Multiple, small, cauliflower like warts (2-3 cm) on para genital region, n&gt;10</td>
<td>4 months</td>
<td>Moderate, ++++, Anthiomaline</td>
</tr>
<tr>
<td>5</td>
<td>BAHC, Mirik DGHC, Darjeeling</td>
<td>S. Subba, Pratap Gaon</td>
<td>1882</td>
<td>06.01.2011</td>
<td>Local ND FC-1, 9 months</td>
<td>Numerous, small and big, rapidly growing, nodular warts all throughout the body, n&gt;50</td>
<td>3 Months</td>
<td>Severe, ++++, Anthiomaline tried</td>
</tr>
<tr>
<td>6</td>
<td>BAHC, Mirik DGHC, Darjeeling</td>
<td>K. Chetri, Soureni</td>
<td>1964</td>
<td>01.02.2011</td>
<td>Darjeeling hill cow-1, 4 years</td>
<td>Frond type numerous teat warts involving all four teats only</td>
<td>6 months</td>
<td>Moderate, ++++, Thuja orally</td>
</tr>
<tr>
<td>7</td>
<td>BAHC, Naxalbari Darjeeling</td>
<td>S. Biswakarma, Atnajote</td>
<td>9742</td>
<td>27.01.2012</td>
<td>CBJ FC-1, 11 Months</td>
<td>Sessile out growths rounded and club shaped and were present mainly on the neck and shoulder region, n&gt;30</td>
<td>6 months</td>
<td>Moderate, ++++, Anthiomaline</td>
</tr>
<tr>
<td>8</td>
<td>BAHC, Naxalbari Darjeeling</td>
<td>B. Singh, Quarter, Naxalbari</td>
<td>10297</td>
<td>20.02.2012</td>
<td>ND HF-1, 2.0 Years</td>
<td>Circular to elongated, rough, dry, horny, sessile and present on the neck, poll, around the eyes and face, n&gt;50</td>
<td>4 months</td>
<td>Severe, ++++, Autohemotherapy</td>
</tr>
<tr>
<td>9</td>
<td>BAHC, Naxalbari Darjeeling</td>
<td>SK Samiruddin, Kestapar</td>
<td>345</td>
<td>11.04.2012</td>
<td>CBJ HF-1, 3 Years</td>
<td>Small cauliflower like warts (3-5 cm) on head, neck, dewlap and inter scapular region, n&gt;20</td>
<td>3 Months</td>
<td>Moderate, ++++, Thuja oral therapy</td>
</tr>
<tr>
<td>10</td>
<td>BAHC, Naxalbari Darjeeling</td>
<td>S. Khatun, Rathkhola</td>
<td>2001</td>
<td>14.07.2012</td>
<td>ND HF-1, 2.5 Years</td>
<td>Hard morbid growths on neck and fore limbs, n&gt;20</td>
<td>4 months</td>
<td>Moderate, ++++, Anthiomaline</td>
</tr>
<tr>
<td>11</td>
<td>BAHC, Naxalbari Darjeeling</td>
<td>P.S. Ekka, Gumguma</td>
<td>3599</td>
<td>16.10.2012</td>
<td>Siri BK-1, 3 Years</td>
<td>Extensive growth on the ear pinna and around the eyes, n&gt;20</td>
<td>3 Months</td>
<td>Moderate, ++++, Anthiomaline</td>
</tr>
<tr>
<td>12</td>
<td>BAHC, Naxalbari Darjeeling</td>
<td>S. Exalco, Naxalbari</td>
<td>3677</td>
<td>20.10.2012</td>
<td>Siri cow-1, 4 Years</td>
<td>Posterios aspect of the thigh and base of the tail, n = 6</td>
<td>6 months</td>
<td>Mild, +, Surgical excision</td>
</tr>
<tr>
<td>13</td>
<td>BAHC, Naxalbari Darjeeling</td>
<td>S. Dutta, Naxalbari</td>
<td>569</td>
<td>20.04.2013</td>
<td>Siri cow-1, 5 Years</td>
<td>Frond type multiple teat warts involving all four teats only, n&gt;10</td>
<td>4 months</td>
<td>Moderate, ++++, Thuja oral therapy</td>
</tr>
<tr>
<td>14</td>
<td>BAHC, Naxalbari Darjeeling</td>
<td>D. Barman, Shantinagar</td>
<td>1731</td>
<td>20.06.2012</td>
<td>ND HF-1, 2.5 Years</td>
<td>Small cauliflower like growths (2-3 cm) on the lower back, sacral region and left axilla, n&gt;15</td>
<td>3 Months</td>
<td>Moderate, ++++, Thuja oral therapy</td>
</tr>
</tbody>
</table>
Table-58: Breed, age group and sex wise synopsis of cutaneous wart (CWT) and teat papilloma (TP) in cattle and buffalo recorded in Veterinary clinics in the District of Darjeeling

<table>
<thead>
<tr>
<th>Breeds affected</th>
<th>Total No. of wart cases</th>
<th>sex</th>
<th>Age group</th>
<th>No of CWT cases</th>
<th>No of TP cases</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>calf hood</td>
<td>sub-adult</td>
<td>adult</td>
</tr>
<tr>
<td>Indigenous and non-descript cattle</td>
<td>12</td>
<td>F-11</td>
<td>2</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td></td>
<td>M-1</td>
<td>-</td>
<td>-</td>
<td>1</td>
</tr>
<tr>
<td>Cross breed cattle (CBJ)</td>
<td>2</td>
<td>F-2</td>
<td>1</td>
<td>1</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td>M-0</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Pure exotic cattle</td>
<td>-</td>
<td>F</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td>M</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Cross breed cattle (HLX)</td>
<td>-</td>
<td>F</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td>M</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Buffalo</td>
<td>-</td>
<td>F</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td>M</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Grand Total</td>
<td>14</td>
<td>F-13</td>
<td>3</td>
<td>6</td>
<td>5</td>
</tr>
</tbody>
</table>
Table-59: Institutional survey on the recorded incidence of bovine papillomatosis in Jalpaiguri District, West Bengal

<table>
<thead>
<tr>
<th>Sl No</th>
<th>Name of the centre</th>
<th>Name of the farmer</th>
<th>O.P. No</th>
<th>Date</th>
<th>Category of animal</th>
<th>Gross pathological observations</th>
<th>Duration of infection</th>
<th>Remarkson severity of affections</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>BAHC, Falakata, Jalpaiguri</td>
<td>Charubala Modak, Satpukheria</td>
<td>887/8</td>
<td>11.6.210</td>
<td>ND MC-1, 7 Months,</td>
<td>Multiple warts on neck region and at ear base, n = 20</td>
<td>4 months</td>
<td>Moderate, ++++, Inj. Anthiomaline</td>
</tr>
<tr>
<td>2</td>
<td>BAHC, Falakata, Jalpaiguri</td>
<td>Sentu Das Moyradanga</td>
<td>2223/12</td>
<td>11.10.2010</td>
<td>CBJ Cow-1, 3 Years</td>
<td>Big (6 cm diameter) cauliflower like growth on left eye orbit with eroded top surface</td>
<td>8 months</td>
<td>Mild, complicated, Surgically excised</td>
</tr>
<tr>
<td>3</td>
<td>BAHC, Falakata, Jalpaiguri</td>
<td>Tarapada Modak, Mayra Danga</td>
<td>2547/6</td>
<td>13.11.2010</td>
<td>ND Cow-1, 3 years</td>
<td>One big (8 cm) size on face, hard, horny, pedunculated wart on brisket</td>
<td>6 months</td>
<td>Mild, Extirpated by surgical intervention</td>
</tr>
<tr>
<td>4</td>
<td>BAHC, Falakata, Jalpaiguri</td>
<td>Anil Mondal, Taluker Tanri</td>
<td>2577/7</td>
<td>9.1.2012</td>
<td>CBJ HF-1, 2 years</td>
<td>Warts distributed at the anterior part of the body, head, neck, face, fore limbs and thorax, n&gt;50</td>
<td>5 months</td>
<td>Severe, ++++, Auto hemotherapy adopted</td>
</tr>
<tr>
<td>5</td>
<td>SAHC, Malbazar, Jalpaiguri</td>
<td>Md. Javed Ali, Dey Shimla</td>
<td>790</td>
<td>10.7.2010</td>
<td>Indigenous HF-1, 2.5 years</td>
<td>Multiple small (1-2 cm) to medium sized (3-4 cm) warts on hind limbs and paragenital area, n&gt;20</td>
<td>6 months</td>
<td>Moderate, Inj. Anthiomaline tried</td>
</tr>
<tr>
<td>6</td>
<td>SAHC, Malbazar, Jalpaiguri</td>
<td>Charou Minge, Rajabagan Tea Ested colony</td>
<td>2471</td>
<td>9.12.2011</td>
<td>ND Heifer, 2.5 years</td>
<td>Whole body papillomatosis with magggotization of multiple warts, n&gt;100</td>
<td>6 months</td>
<td>Severe, complicated, ++++, Treated by antimony compound (Anthiomaline)</td>
</tr>
<tr>
<td>7</td>
<td>SAHC, Malbazar, Jalpaiguri</td>
<td>Ambar Adhikery Malbazar</td>
<td>2478</td>
<td>10.12.2011</td>
<td>Indigenous Heifer, 2.5 years</td>
<td>Multiple warts on hind limbs and paragenital area, n&gt;20</td>
<td>5 months</td>
<td>Moderate, Inj. Anthiomaline tried</td>
</tr>
<tr>
<td>8</td>
<td>ABAHC, Kumargram, Jalpaiguri</td>
<td>Ranjit Barman Prubha Chakchaka</td>
<td>3130</td>
<td>24.12.2009</td>
<td>CBJ Cow, 4 years</td>
<td>Multiple frond type teat warts</td>
<td>5 months</td>
<td>Moderate; ++++, Thuja orally</td>
</tr>
<tr>
<td>9</td>
<td>ABAHC, Kumargram, Jalpaiguri</td>
<td>Sujit Maitra, Dakshin Rampur</td>
<td>3137</td>
<td>24.12.2009</td>
<td>ND Heifer, 2.5 years</td>
<td>Multiple warts on hind limbs and paragenital area, n&gt;50</td>
<td>4 months</td>
<td>Severe, complicated, ++++, Auto hemotherapy tried</td>
</tr>
<tr>
<td>10</td>
<td>ABAHC, Kumargram, Jalpaiguri</td>
<td>Babor Ali Kumargram</td>
<td>3874</td>
<td>22.02.2010</td>
<td>Murrah Buffalo Heifer, 3 years</td>
<td>Exophytic sessile warts on back and limbs(left hind legs), n&gt;30</td>
<td>7 months</td>
<td>Moderate, Inj. Anthiomaline tried</td>
</tr>
<tr>
<td>11</td>
<td>ABAHC, Kumargram, Jalpaiguri</td>
<td>Prafulla Sen, Paschim Rampur</td>
<td>3883</td>
<td>22.02.2010</td>
<td>ND Heifer, 2.5 years</td>
<td>Hus luxuriant warty growths on head, neck and around eyes, n&gt;60</td>
<td>5 months</td>
<td>Severe,++++, Thuja orally and auto hemotherapy done</td>
</tr>
<tr>
<td>12</td>
<td>BAHC, Kumargram, Jalpaiguri</td>
<td>Dayal Saha, Dakshin Rampur</td>
<td>300</td>
<td>21.04.2010</td>
<td>CBJ Heifer; 2.6 years</td>
<td>Sessile exophytic warts on croup, crest and lumber region of back, n&gt;30</td>
<td>6 months</td>
<td>Moderate, Inj. Anthiomaline tried</td>
</tr>
<tr>
<td>13</td>
<td>BAHC, Kumargram, Jalpaiguri</td>
<td>Sujit Debnath, Batla</td>
<td>2072</td>
<td>09.09.2010</td>
<td>ND Heifer, 2.5 years</td>
<td>Papillomnodules on limbs and thorax, scattered lesions, n&gt;40</td>
<td>5 months</td>
<td>Moderate, Inj. Anthiomaline tried</td>
</tr>
<tr>
<td>No.</td>
<td>District, Block, Subdivision</td>
<td>Animal Type</td>
<td>Age</td>
<td>Description</td>
<td>Treatment</td>
<td>Duration</td>
<td>Notes</td>
<td></td>
</tr>
<tr>
<td>-----</td>
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<td></td>
</tr>
<tr>
<td>14</td>
<td>ABAHC, Kalchini Block, Jalpaiguri</td>
<td>CBJ Cow-1, 4 years</td>
<td>Tag type teat warts on hind teats crest, n&gt;15</td>
<td>24.08.2011</td>
<td>Moderate, +++</td>
<td>10 months</td>
<td>Inj. Anthiomaline tried</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>BAHC, Mekhliganj, Jalpaiguri</td>
<td>ND Heifer, 2.5 years</td>
<td>Multiple warts as if bunch of grapes on neck, n&gt;30</td>
<td>16.05.2011</td>
<td>Moderate, +++</td>
<td>6 months</td>
<td>Inj. Anthiomaline tried</td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>BAHC, Mekhliganj, Jalpaiguri</td>
<td>ND Bullock, 4 years</td>
<td>Very big size (10cm) single cauliflower like wart on thorax</td>
<td>18.10.2011</td>
<td>Mild; +, surgically excised</td>
<td>7 months</td>
<td></td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>BAHC, Mekhliganj, Jalpaiguri</td>
<td>CBJ Heifer; 1.5 years</td>
<td>Numerous mulberry shaped warts of varying sizes (3-5 cm) on face, neck and fore limbs, n&gt;50</td>
<td>20.29.2011</td>
<td>Severe,++++, Autohemo therapy adopted as remedy</td>
<td>4 months</td>
<td></td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>BAHC, Meteli Block, Jalpaiguri</td>
<td>ND Heifer, 2.5 years</td>
<td>Cauliflower like warts (3-4cm) on neck, thorax and belly, n&gt;20</td>
<td>29.06.2012</td>
<td>Moderate, +++</td>
<td>7 months</td>
<td>Inj. Anthiomaline tried</td>
<td></td>
</tr>
<tr>
<td>19</td>
<td>BAHC, Meteli Block, Jalpaiguri</td>
<td>ND Heifer, 2.5 years</td>
<td>Very big size multiple cauliflower like warts on thorax, n = 12</td>
<td>2027.2012</td>
<td>Moderate, +++</td>
<td>5 months</td>
<td>Throat surgically removed</td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>BAHC, Gayerkata</td>
<td>CBJ Heifer; 1.5 years</td>
<td>Scattered, multiple, club shaped warts on head, neck and fore limbs, n&gt;30</td>
<td>03.08.2010</td>
<td>Moderate, +++</td>
<td>4 Months</td>
<td>Inj. Anthiomaline tried</td>
<td></td>
</tr>
<tr>
<td>21</td>
<td>BAHC, Gayerkata</td>
<td>CBJ HF, 18 Months</td>
<td>Numerous ,small cauliflower like warts on both the fore limbs and the barrel, n&gt;30</td>
<td>27.08.2010</td>
<td>Moderate, +++</td>
<td>6 Months</td>
<td>Thuja orally given</td>
<td></td>
</tr>
<tr>
<td>22</td>
<td>BAHC, Gayerkata</td>
<td>ND Heifer, 2.5 years</td>
<td>CWTs on limbs only, n&gt;30</td>
<td>05.07.2011</td>
<td>Moderate, +++</td>
<td>5 months</td>
<td>Inj. Anthiomaline tried</td>
<td></td>
</tr>
<tr>
<td>23</td>
<td>BAHC, Gayerkata</td>
<td>ND MC, 12 Months</td>
<td>Expensive nodular lesions all throughout the body, n&gt;100</td>
<td>12.09.2011</td>
<td>Severe,++++, Autohemo therapy adopted as remedy</td>
<td>4 Months</td>
<td></td>
<td></td>
</tr>
<tr>
<td>24</td>
<td>BAHC, Gayerkata</td>
<td>CBJ FC, 11 Months</td>
<td>Multiple, small, cauliflower like warts seen on lower fore limbs and barrel, n&gt;30</td>
<td>06.05.2012</td>
<td>Moderate, +++</td>
<td>4 Months</td>
<td>Inj. Anthiomaline tried</td>
<td></td>
</tr>
<tr>
<td>25</td>
<td>BAHC, Nagrakata</td>
<td>Sahiwal MC, 11 Months</td>
<td>Cauliflower like peri orbital warts, n&gt;10</td>
<td>23.04.2013</td>
<td>Moderate, +++</td>
<td>3 Months</td>
<td>Thuja orally tried</td>
<td></td>
</tr>
<tr>
<td>26</td>
<td>BAHC, Nagrakata</td>
<td>Sahiwal HF, 30 Months</td>
<td>Small pedunculated warts on both sides of the neck and fore limbs, n&gt;20</td>
<td>02.04.2013</td>
<td>Moderate, +++</td>
<td>5 Months</td>
<td>Thuja orally tried</td>
<td></td>
</tr>
</tbody>
</table>
Table-60: Breed, age group and sex wise synopsis of cutaneous wart (CWT) and teat papilloma (TP) in cattle and buffalo recorded in Veterinary Clinics in Jalpaiguri District

<table>
<thead>
<tr>
<th>Breeds affected</th>
<th>Total No. of recorded wart cases</th>
<th>Sex</th>
<th>Age group</th>
<th>No of CWT cases</th>
<th>No of TP cases</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Calf hood</td>
<td>Sub-adult</td>
<td>Adult</td>
</tr>
<tr>
<td>Indigenous and non-descript cattle</td>
<td>17</td>
<td>F-12</td>
<td>-</td>
<td>11</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>M-5</td>
<td>3</td>
<td>-</td>
<td>2</td>
</tr>
<tr>
<td>Cross breed cattle (CBJ)</td>
<td>9</td>
<td>F-9</td>
<td>1</td>
<td>5</td>
<td>3</td>
</tr>
<tr>
<td>Pure breed cattle (Exotic)</td>
<td>-</td>
<td>F</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td>M</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Cross breed cattle (HLX)</td>
<td>-</td>
<td>F</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td>M</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Buffalo</td>
<td>1</td>
<td>F-1</td>
<td>-</td>
<td>1</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td>M</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Grand Total</td>
<td>27</td>
<td>F-22,M-5</td>
<td>4</td>
<td>17</td>
<td>6</td>
</tr>
</tbody>
</table>
Table-61: Institutional survey on cutaneous bovine papillomatosis in Maldaha District of West Bengal

<table>
<thead>
<tr>
<th>Sl No</th>
<th>Name of the centre</th>
<th>Owners name &amp; address</th>
<th>OP No. and Date</th>
<th>Species</th>
<th>Category of animal affected</th>
<th>Location of wart</th>
<th>Gross clinical observations</th>
<th>Duration of infection</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>BAHC, Golapganj</td>
<td>Sk Mustafa, Vill-Baburbona, Golapganj, Maldaha</td>
<td>889 17.08.10</td>
<td>Bovine</td>
<td>RS HF-1, 2.5 years</td>
<td>Fore limbs and thorax</td>
<td>Low, flat, sessile type warts with rough surface: n&gt;30</td>
<td>4 months</td>
<td>++++, Moderate : Treated by Inj Anthiomaline</td>
</tr>
<tr>
<td>2</td>
<td>BAHC, Golapganj</td>
<td>Surjahan Sk, Vill-Balutola, Chorianantapur</td>
<td>1110 6.10.12</td>
<td>Bovine</td>
<td>CBJ Cow-1, 3 years</td>
<td>Head, neck and thorax</td>
<td>Bunch of grapes like warts; n = 15</td>
<td>6 months</td>
<td>++++, Moderate : Thuja oral therapy</td>
</tr>
<tr>
<td>3</td>
<td>BAHC, Golapganj</td>
<td>Izul Rahaman, Vill-Sahrbaha, Golapganj</td>
<td>1380 27.11.10</td>
<td>Bovine</td>
<td>ND MC-1, 9 Months</td>
<td>Head, eyes and ears</td>
<td>Round, hard, horny pedunculated warts: n = 12</td>
<td>5 months</td>
<td>++++, Moderate : Auto hemotherapy tried</td>
</tr>
<tr>
<td>4</td>
<td>BAHC, Golapganj</td>
<td>Md. Isuddin, Vill-Kamet, Golapganj</td>
<td>1895 12,02,11</td>
<td>Bovine</td>
<td>ND Cow-1, 4 years</td>
<td>Ears and around eyes</td>
<td>Round to ovoid, scattered, pedunculated warts: n = 22</td>
<td>6 months</td>
<td>++++, Moderate : Treated by Inj/Anthiomaline</td>
</tr>
<tr>
<td>5</td>
<td>BAHC, Golapganj</td>
<td>Naresh Singha, Golapganj</td>
<td>2066 17.03.11</td>
<td>Bovine</td>
<td>RS HF-1, 2 years</td>
<td>Teats only</td>
<td>Horny papillae with few lateral branches, n&gt;20</td>
<td>5 months</td>
<td>++++, Moderate : Thuja oral therapy</td>
</tr>
<tr>
<td>6</td>
<td>BAHC, Golapganj</td>
<td>Sabdul Mea, Vill-Baburbona</td>
<td>215, 17.05.11</td>
<td>Bovine</td>
<td>CBJ Cow-1 3 years</td>
<td>Around eyes</td>
<td>Flat, diffuse type warts with rough surface: n = 14</td>
<td>6 months</td>
<td>++++, Moderate : Treated by Inj Anthiomaline</td>
</tr>
<tr>
<td>7</td>
<td>BAHC, Golapganj</td>
<td>Samaun SK, Vill-Golapganj</td>
<td>684 18.8.11</td>
<td>Bovine</td>
<td>ND Cow-1, 4 years</td>
<td>Paragenital region and perineum</td>
<td>Small (2-3 cm) cauliflower like warts, n = 15</td>
<td>5 months</td>
<td>++++, Moderate : Auto hemotherapy tried</td>
</tr>
<tr>
<td>8</td>
<td>BAHC, Golapganj</td>
<td>Dwijen Mondal Vill-DoulatTola, Chorianantapur</td>
<td>1303, 26,12.11</td>
<td>Bovine</td>
<td>ND MC-1, 9 Months</td>
<td>Anal region and perineum</td>
<td>Cauliflower like warts: n = 15</td>
<td>5 months</td>
<td>++++, Moderate : Auto hemotherapy tried</td>
</tr>
<tr>
<td>9</td>
<td>BAHC, Golapganj</td>
<td>Giasuddin Sk, Vill-Baburbona</td>
<td>1457, 17.01.12</td>
<td>Bovine</td>
<td>Gir HF-1, 2 years</td>
<td>Perianal region</td>
<td>Round, pedunculated warts: n = 12</td>
<td>6 months</td>
<td>++++, Moderate : Treated by Inj Anthiomaline</td>
</tr>
<tr>
<td>10</td>
<td>BAHC, Golapganj</td>
<td>Viku Mondal, Vill-Donaichak, Sahabapur</td>
<td>1692, 29.02.12</td>
<td>Bovine</td>
<td>CBJ Cow-1, 3 years</td>
<td>Teats and udder</td>
<td>Flat, diffuse type warts with rough surface: n = 12</td>
<td>6 months</td>
<td>++++, Moderate : Treated by Inj Anthiomaline</td>
</tr>
<tr>
<td>11</td>
<td>BAHC, Golapganj</td>
<td>Panchanan Mondal, Vill-Sahabapur</td>
<td>1831, 29.03.12</td>
<td>Bubaline</td>
<td>MB FC-1, 12 Months</td>
<td>Paragenital region</td>
<td>Cauliflower like warts (4-5 cm) in cluster, n = 6</td>
<td>6 months</td>
<td>++++, Moderate : Thuja oral therapy</td>
</tr>
<tr>
<td>12</td>
<td>BAHC, Nabagram Block</td>
<td>Sasti Margit, Nabagram</td>
<td>3174,13.08.12</td>
<td>Bovine</td>
<td>ND PC-1, 9 Months</td>
<td>Intercoastal and back region</td>
<td>Horny warts in cluster, n = 12</td>
<td>3 months</td>
<td>++++, Moderate : Thuja oral therapy</td>
</tr>
<tr>
<td>Case Number</td>
<td>Location/Block</td>
<td>Name</td>
<td>Date</td>
<td>Breed/Type</td>
<td>Age/Stage</td>
<td>Location</td>
<td>Type of Lesion</td>
<td>Size/Diameter</td>
<td>Treatment</td>
</tr>
<tr>
<td>-------------</td>
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</tr>
<tr>
<td>13</td>
<td>BAHC, Nabagram Block</td>
<td>Fazl Shek Silgram</td>
<td>3501, 31.08.12</td>
<td>Bovine</td>
<td>CBJ Cow-1, 4 years</td>
<td>Perianal and paragenital</td>
<td>Cauliflower like warts in cluster, n = 9</td>
<td></td>
<td>++++, Moderate : Thuja oral therapy</td>
</tr>
<tr>
<td>14</td>
<td>BAHC, Nabagram Block</td>
<td>Ujjwal Ghosh Easumpur</td>
<td>2861, 21.09.12</td>
<td>Bovine</td>
<td>ND FC, 11 Months</td>
<td>Head, neck and belly</td>
<td>Round, nodular warts with rough surface : n = 16</td>
<td></td>
<td>++++, Moderate : Treated by Inj Anthiomaline</td>
</tr>
<tr>
<td>15</td>
<td>BAHC, Nabagram Block</td>
<td>Ramjan Sekh Khojordanga</td>
<td>2934, 25.09.12</td>
<td>Bovine</td>
<td>ND BK-1, 4 Years</td>
<td>Both side of the neck and thorax</td>
<td>Cauliflower like warts in cluster, n = 8</td>
<td></td>
<td>++++, Moderate : Thuja oral therapy</td>
</tr>
<tr>
<td>16</td>
<td>SAHC, Malda</td>
<td>Minmoy Sarkar Haidarpur</td>
<td>1110, 14.07.12</td>
<td>Bovine</td>
<td>ND FC, 13 Months</td>
<td>Both sides of the neck, dewlap, brisket and back</td>
<td>Small cauliflower like warts (3-4 cm), n&gt;20</td>
<td></td>
<td>++++, Moderate : Treated by Inj Anthiomaline</td>
</tr>
<tr>
<td>17</td>
<td>SAHC, Malda</td>
<td>Khagen Mondal Bagbari</td>
<td>1192, 21.07.12</td>
<td>Bovine</td>
<td>ND FC-1, 11 Months</td>
<td>on face, neck and fore limbs</td>
<td>Luxuriant exophytic growths n = 10</td>
<td></td>
<td>++++, Moderate : Treated by Inj Anthiomaline</td>
</tr>
<tr>
<td>18</td>
<td>SAHC, Malda</td>
<td>Subrata Saha Haidarpur</td>
<td>1347, 02.08.12</td>
<td>Bovine</td>
<td>ND MC-1, 13 Months</td>
<td>Inter scapular region and elbow</td>
<td>Conical outgrowths with fissured surface, n&gt;15</td>
<td></td>
<td>++++, Moderate : Treated by Inj Anthiomaline</td>
</tr>
<tr>
<td>19</td>
<td>SAHC, Malda</td>
<td>Dharmendra Mandal, Kulipara</td>
<td>1482, 17.08.12</td>
<td>Bovine</td>
<td>ND FC-1, 11 Months</td>
<td>Hind limbs and right axilla</td>
<td>Solid and raised skin tumours (n&gt;30) with roughened surface</td>
<td></td>
<td>++++, Moderate : Thuja oral therapy</td>
</tr>
<tr>
<td>20</td>
<td>SAHC, Malda</td>
<td>Rintu Halder, Rabindra Bhaban</td>
<td>1653, 05.09.12</td>
<td>Bovine</td>
<td>CBJ Cow-1, 5 Years</td>
<td>Teats and udder</td>
<td>Filiform and digitate warts, n&gt;10, 1-1.5 cm in diameter</td>
<td></td>
<td>++++, Moderate : Thuja oral therapy</td>
</tr>
<tr>
<td>21</td>
<td>SAHC, Malda</td>
<td>Habibur SK, Kestapur</td>
<td>2069, 16.10.12</td>
<td>Bovine</td>
<td>CBJ Cow-1, 3 Years</td>
<td>Inner aspect of the left thigh and left axilla</td>
<td>Tightly clustered raised flattened warts, n&gt;40, 2-3 cm in diameter</td>
<td></td>
<td>++++, Moderate : Thuja oral therapy</td>
</tr>
<tr>
<td>22</td>
<td>BAHC, Baisnabagar, Kaliachak-3 Block</td>
<td>Habibur Rahaman, Krishnapur</td>
<td>70, 11.4.2012</td>
<td>Bovine</td>
<td>Gir HF-1, 3 Years</td>
<td>Head, neck and shoulder</td>
<td>Raised warts with roughened surface, n&gt;20, 3-4 cm in diameter</td>
<td></td>
<td>++++, Moderate : Thuja oral therapy</td>
</tr>
<tr>
<td>23</td>
<td>BAHC, Baisnabagar, Kaliachak-3 Block</td>
<td>Khedu Ghosh, Jotchaimpara</td>
<td>142, 19.4.12</td>
<td>Bovine</td>
<td>ND FC-1, 12 Months</td>
<td>Both sides of the neck, dewlap and sternum</td>
<td>Small (2-3 cm in diameter) cauliflower like warts (n&gt;20) with narrow base</td>
<td></td>
<td>++++, Moderate : Treated by Inj Anthiomaline</td>
</tr>
<tr>
<td>24</td>
<td>BAHC, Baisnabagar, Kaliachak-3 Block</td>
<td>Anul Haque, Joinpur</td>
<td>201, 27.4.12</td>
<td>Bovine</td>
<td>CBJ Cow-1, 4 Years</td>
<td>All four teats only</td>
<td>Filiform warts, n&gt;10, 1-1.5 cm in diameter</td>
<td></td>
<td>++++, Moderate : Thuja oral therapy</td>
</tr>
<tr>
<td>25</td>
<td>BAHC, Baisnabagar, Kaliachak-3 Block</td>
<td>Fakir Mondal, Sat Tanga Para</td>
<td>231, 8.5.2012</td>
<td>Bovine</td>
<td>ND FC-1, 11 Months</td>
<td>Peri orbital region and both sides of the neck</td>
<td>Cauliflower and club shaped warts, n&gt;15, 3-5 cm in diameter</td>
<td></td>
<td>++++, Moderate : Thuja oral therapy</td>
</tr>
<tr>
<td>26</td>
<td>BAHC, Baisnabagar, Kaliachak-3 Block</td>
<td>Lakshmi Mondal, Krishnapur</td>
<td>434, 6.6.2012</td>
<td>Bovine</td>
<td>ND BK-1, 4 Years</td>
<td>Left side of the neck</td>
<td>Hard, horny non pedunculated warts, n&gt;30, 3-4 cm in diameter</td>
<td></td>
<td>++++, Moderate : Treated by Inj Anthiomaline</td>
</tr>
<tr>
<td>No.</td>
<td>Site</td>
<td>Case Name</td>
<td>Case ID/Date</td>
<td>Species/ Breed</td>
<td>Age</td>
<td>Location</td>
<td>Lesion Description</td>
<td>Duration</td>
<td>Response Details</td>
</tr>
<tr>
<td>-----</td>
<td>-----------------------------</td>
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<td>-----</td>
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<td>---------------------------------------------------------------------</td>
<td>----------</td>
<td>----------------------------------------------------------</td>
</tr>
<tr>
<td>27</td>
<td>BAHC, Baisnabagar, Kaliachak-3 Block</td>
<td>Dilip Basak, Krishnapur</td>
<td>605</td>
<td>Bubaline</td>
<td>MB HF-1, 3 Years</td>
<td>Perineum and flank region</td>
<td>Squat type horny warts, n&gt;15, 4-5 cm in diameter</td>
<td>3 months</td>
<td>++++,Moderate :Thuja oral therapy</td>
</tr>
<tr>
<td>28</td>
<td>BAHC, Baisnabagar, Kaliachak-3 Block</td>
<td>Jyotin Mandal</td>
<td>774</td>
<td>Bovine</td>
<td>Gir cow-1, 3.5 Years</td>
<td>Hind limbs and lineaulba</td>
<td>Cauliflower like warts on limbs and lobulated warts on ventral abdomen, n&gt;20, 3-5 cm in diameter</td>
<td>5 months</td>
<td>++++,Moderate :Thuja oral therapy and auto hemotherapy</td>
</tr>
<tr>
<td>29</td>
<td>BAHC, Baisnabagar, Kaliachak-3 Block</td>
<td>Dayaram Mandal Dariapur</td>
<td>545</td>
<td>Bovine</td>
<td>Gir cow-1, 4 Years</td>
<td>Teats only</td>
<td>Rice grain type warts, n&gt;10, 1-2 cm</td>
<td>5 months</td>
<td>++++,Moderate :Thuja oral therapy</td>
</tr>
<tr>
<td>30</td>
<td>BAHC, Baisnabagar, Kaliachak-3 Block</td>
<td>Samsuddin Sk Krishnapur</td>
<td>929</td>
<td>Bovine</td>
<td>CBJ Cow-1, 4 Years</td>
<td>Gluteal region and right thigh</td>
<td>Big sized warts (5-7 cm) with wide base with horny projections, n = 6, 5-6 cm in diameter</td>
<td>5 months</td>
<td>Mild, +, Surgical cure</td>
</tr>
<tr>
<td>31</td>
<td>BAHC, Baisnabagar, Kaliachak-3 Block</td>
<td>Binoy Mandal Rathbari</td>
<td>1013</td>
<td>Bovine</td>
<td>CBJ Cow-1, 3 Years</td>
<td>Peri orbital region and ear base</td>
<td>Cauliflower like warts, n&gt;20, 4-5 cm in diameter</td>
<td>4 Months</td>
<td>++++, Moderate, Autohemotherapy</td>
</tr>
<tr>
<td>32</td>
<td>BAHC, Baisnabagar, Kaliachak-3 Block</td>
<td>Bikash Choudhury, Jelepara</td>
<td>1116</td>
<td>Bovine</td>
<td>CBJ Cow-1, 4 Years</td>
<td>Left Ear pinna and elbow point</td>
<td>Cauliflower and club shaped warts, n&gt;15, 3-5 cm in diameter</td>
<td>3 months</td>
<td>++++, Moderate, Autohemotherapy</td>
</tr>
<tr>
<td>33</td>
<td>BAHC, Baisnabagar, Kaliachak-3 Block</td>
<td>Jiten Sarkar Baishnabnagar</td>
<td>1162</td>
<td>Bovine</td>
<td>HLX Cow-1, 3 Years</td>
<td>All four teats</td>
<td>Frond type warts (1-2 cm) with smooth outer surface, n&gt;10</td>
<td>5 months</td>
<td>++++, Moderate, Inj. Ivermectin tried</td>
</tr>
</tbody>
</table>
Table-62: Breed, age group and sex wise synopsis of cutaneous wart (CWT) and teat papilloma (TP) in cattle and buffalo, recorded in Veterinary clinics in Maldaha District

<table>
<thead>
<tr>
<th>Breeds affected</th>
<th>Total No. of recorded wart cases</th>
<th>Sex</th>
<th>Age group</th>
<th>No of CWT cases</th>
<th>No of TP cases</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Calf hood</td>
<td>Sub-adult</td>
<td>Adult</td>
</tr>
<tr>
<td>Indigenous and non-descript cattle</td>
<td>20</td>
<td>F-15</td>
<td>7</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td></td>
<td>M-5</td>
<td>3</td>
<td>-</td>
<td>2</td>
</tr>
<tr>
<td>Cross breed cattle (CBJ)</td>
<td>10</td>
<td>F-10</td>
<td>-</td>
<td>-</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td></td>
<td>M</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Pure exotic cattle</td>
<td>-</td>
<td>F</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td>M</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Cross breed cattle (HLX)</td>
<td>1</td>
<td>F-1</td>
<td>-</td>
<td>-</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>M</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Buffalo</td>
<td>2</td>
<td>F-2</td>
<td>1</td>
<td>1</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td>M</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Grand Total</td>
<td>33</td>
<td>F-27</td>
<td>11</td>
<td>5</td>
<td>17</td>
</tr>
</tbody>
</table>
Table-63: Institutional survey on the recorded incidence of bovine papillomatosis in Coochbehar District, West Bengal

<table>
<thead>
<tr>
<th>Sl No</th>
<th>Name of the centre</th>
<th>Name of the farmer</th>
<th>O.P. No</th>
<th>Date</th>
<th>Category of animal</th>
<th>Gross pathological observations</th>
<th>Duration of infection</th>
<th>Remarks on severity of affections</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>BAHC; Baxirhat, Cooch Behar</td>
<td>Nimai Sarkar, Vill-Choto Lalkuthi, Tufanganj</td>
<td>0175968</td>
<td>06.03.2012</td>
<td>CBJ Cow-1, 3 years</td>
<td>Small rice grain type warts on all four teats, n&gt;10</td>
<td>5 Months</td>
<td>++++, Moderate Autohemotherapy</td>
</tr>
<tr>
<td>2</td>
<td>BAHC; Baxirhat, Cooch Behar</td>
<td>Prakash Pal, Vill-Baxirhat</td>
<td>0175969</td>
<td>07.03.2012</td>
<td>ND MC-1, 12 Months</td>
<td>Multiple small (2-3 cm), nodular warts around the eyes, n = 20</td>
<td>4 Months</td>
<td>++++, Moderate Autohemotherapy</td>
</tr>
<tr>
<td>3</td>
<td>BAHC; Baxirhat, Cooch Behar</td>
<td>Jagat Chandra Mallick, Baxirhat</td>
<td>605</td>
<td>23.04.2012</td>
<td>CBJ FC-1, 10 Months</td>
<td>Multiple sessile warts of varying sizes, 2-3 cm, on all four limbs, n=20</td>
<td>4 Months</td>
<td>++++, Moderate Inj. Anthiomaline</td>
</tr>
<tr>
<td>4</td>
<td>SAHC, Mekhliganj, Cooch Behar</td>
<td>Manik Adhikary, Vill-Fulkanagari</td>
<td>452</td>
<td>16.05.2011</td>
<td>CBJ Cow-1; 3 years</td>
<td>Rice grain type warts on teats only, n = 18, 0.5-1 cm</td>
<td>6 Months</td>
<td>+++; Moderate Inj. Levamisole</td>
</tr>
<tr>
<td>5</td>
<td>SAHC, Mekhliganj, Cooch Behar</td>
<td>D. Barman, Vill-Baxirtari</td>
<td>1824</td>
<td>18.10.2011</td>
<td>CBJ HF-1, 2 years</td>
<td>Multiple lobular warts on face and neck, n = 13, 1-3 cm</td>
<td>5 Months</td>
<td>++++, Moderate Inj. Ivermectin tried</td>
</tr>
<tr>
<td>6</td>
<td>SAHC, Mekhliganj, Cooch Behar</td>
<td>Hablu Rai, Vill-Panchmull</td>
<td>2029</td>
<td>18.11.11</td>
<td>CBJ HF-1, 2.5 years</td>
<td>Multiple nodular warts on ears, around the eyes and fore limbs , n = 15, 3-5 cm</td>
<td>5 Months</td>
<td>+++; Moderate Thuja oral therapy</td>
</tr>
<tr>
<td>7</td>
<td>BAHC, Mathabhanga-2, Cooch Behar</td>
<td>Shaid Hussain, Ambari, 19 Bigha, Ghoksadanga</td>
<td>1278</td>
<td>06.05.2011</td>
<td>CBJ MC-1,13 Months</td>
<td>Multiple nodular facial warts, n = 13, 2-3 cm</td>
<td>4 Months</td>
<td>++++, Moderate Inj. Anthiomaline tried</td>
</tr>
<tr>
<td>8</td>
<td>BAHC, Mathabhanga-2, Cooch Behar</td>
<td>Jumatun Bibi, Ghoksadanga</td>
<td>1290</td>
<td>11.5.2011</td>
<td>Gir HF-1, 2 Years</td>
<td>Multiple cauliflowers like warts on head, neck and around the eyes,.n = 22, 1-3 cm</td>
<td>6 Months</td>
<td>++++, Moderate Autohemotherapy</td>
</tr>
</tbody>
</table>
Table-64: Breed, age group and sex wise synopsis of cutaneous wart (CWT) and teat papilloma (TP) in cattle and buffalo recorded in Veterinary clinics in the District of Cooch Behar

<table>
<thead>
<tr>
<th>Breeds affected</th>
<th>Total No. of wart cases</th>
<th>Sex</th>
<th>Age group</th>
<th>No of CWT cases</th>
<th>No of TP cases</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Calf hood</td>
<td>Sub-adult</td>
<td>Adult</td>
</tr>
<tr>
<td>Indigenous and non-descript cattle</td>
<td>2</td>
<td>F-1</td>
<td>1</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td>M-1</td>
<td>-</td>
<td>1</td>
<td>-</td>
</tr>
<tr>
<td>Cross breed cattle (CBJ)</td>
<td>6</td>
<td>F-5</td>
<td>1</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>M-1</td>
<td>1</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Pure exotic cattle</td>
<td>-</td>
<td>F</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td>M</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Cross breed cattle (HLX)</td>
<td>-</td>
<td>F</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td>M</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Buffalo</td>
<td>-</td>
<td>F</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td>M</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Grand Total</td>
<td>8</td>
<td>F-5</td>
<td>3</td>
<td>3</td>
<td>2</td>
</tr>
</tbody>
</table>
Table-65: Institutional survey on the recorded incidence of bovine papillomatosis in Uttar Dinajpur District, West Bengal

<table>
<thead>
<tr>
<th>Sl No</th>
<th>Name of the centre</th>
<th>Name of the farmer</th>
<th>O.P. No</th>
<th>Date</th>
<th>Category of animal</th>
<th>Gross pathological observations</th>
<th>Duration of infection</th>
<th>Remarks on severity of affections</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>BAHC, Itahar Block</td>
<td>Swarnendu Sarkar</td>
<td>Itahar</td>
<td>1604/260/17</td>
<td>17.06.2011</td>
<td>CBJ HF-1, 2.0 years Typical cauliflower like warts (4-5 cm) on vulval lips and cleft, The paragenital warts, n&gt;15</td>
<td>6 months</td>
<td>Moderate,+++ Inj. Ivermectin</td>
</tr>
<tr>
<td>2</td>
<td>BAHC, Itahar Block</td>
<td>Aleja Bibi</td>
<td>Vill-Dighabari</td>
<td>1609/265/5</td>
<td>18.06.2011</td>
<td>Gircow-1,4 years Cutaneous warts at perianal region, n&gt;20</td>
<td>6 months</td>
<td>Moderate,+++ Autohemotherapy</td>
</tr>
<tr>
<td>3</td>
<td>BAHC, Itahar Block</td>
<td>Romjan Ali</td>
<td>Vill-Dighabari</td>
<td>1669/317/22</td>
<td>21.06.2011</td>
<td>ND HF-1,2 years Cutaneous and vulvar warts, conical in shape (2-4 cm), n = 15</td>
<td>5 Months</td>
<td>Moderate,+++ Inj. Anthiomaline</td>
</tr>
<tr>
<td>4</td>
<td>BAHC, Itahar Block</td>
<td>Dijendra Nath Mahato</td>
<td>Vill-Chalunia</td>
<td>1700/359/23</td>
<td>23.06.2011</td>
<td>CBJ HF-1, 2.5 years Multiple club shaped and mulberry like warts on neck, thorax and fore lower limbs, n&gt;100</td>
<td>7 months</td>
<td>Severe,++++, Auto hemotherapy</td>
</tr>
<tr>
<td>5</td>
<td>BAHC, Itahar Block</td>
<td>Arun Kr. Ghosh</td>
<td>Vill-Itahar</td>
<td>1725/381/23</td>
<td>25.06.2011</td>
<td>Numerous round and flat warts (4-6 cm) all over the body, n&gt;100</td>
<td>3 months</td>
<td>Severe,++++, Auto hemotherapy</td>
</tr>
<tr>
<td>6</td>
<td>BAHC, Itahar Block</td>
<td>Sadhat Sarkar</td>
<td>Vill-Chalunia</td>
<td>1771/427/12</td>
<td>29.06.11</td>
<td>CBJ Cow-1, 5 years Big cauliflower like warts (6-8 cm) on axilla, n&gt;10</td>
<td>7 months</td>
<td>Moderate,+++ Surgical excision</td>
</tr>
<tr>
<td>7</td>
<td>BAHC, Itahar Block</td>
<td>Aruna Das, Vill-Paik Para</td>
<td>1949/172/01</td>
<td>15.07.2011</td>
<td>ND HF-1, 2 years</td>
<td>Multiple warts of varying sizes on head, neck and shoulder, n=20</td>
<td>6 months</td>
<td>Moderate,+++ Inj. Anthiomaline</td>
</tr>
<tr>
<td>8</td>
<td>BAHC, Itahar Block</td>
<td>Samiruddin Ali</td>
<td>Vill-Ghera</td>
<td>1829/62/26</td>
<td>05.07.2011</td>
<td>RS FC-1 , 10 months Cluster of warts (4-5 cm) around eyes and ears, n=8</td>
<td>3 months</td>
<td>Mild, + Thuja orally</td>
</tr>
<tr>
<td>9</td>
<td>BAHC, ItaharBlock</td>
<td>Samiruddin Ali</td>
<td>Vill-Ghera</td>
<td>1830/63/27</td>
<td>05.07.2011</td>
<td>ND cow-1, 4 years Cluster of warts on axilla and at inner aspect of thigh (medial region), n&gt;50</td>
<td>6 months</td>
<td>Moderate,+++ Inj. Anthiomaline</td>
</tr>
<tr>
<td>10</td>
<td>BAHC, Itahar Block</td>
<td>Monglu Das</td>
<td>Vill-Porsa</td>
<td>1841/64/10</td>
<td>05.07.2011</td>
<td>CBJ HF-1, 2.5 years Papulonodular paragenital warts, n&gt;20</td>
<td>6 months</td>
<td>Moderate,+++ Thuja orally</td>
</tr>
<tr>
<td>11</td>
<td>BAHC, Itahar Block</td>
<td>Manirul Islam</td>
<td>Muralipukur</td>
<td>3612</td>
<td>06.11.12</td>
<td>ND BK-1, 4 years Cluster of warts on face and neck, n&gt;30</td>
<td>6 months</td>
<td>Moderate,+++ Inj. Anthiomaline</td>
</tr>
<tr>
<td>12</td>
<td>BAHC, Itahar Block</td>
<td>Monoranjan Basak</td>
<td>Elabact</td>
<td>3638</td>
<td>06.11.12</td>
<td>ND BK-1, 4 years Big size (7 cm in diameter) solitary wart on back</td>
<td>3 months</td>
<td>Mild,+, surgical cure</td>
</tr>
<tr>
<td>13</td>
<td>BAHC,Kaliaganj Block</td>
<td>Shambhu Chouhan</td>
<td>Hospital Para, Kaliaganj</td>
<td>880</td>
<td>28.05.2012</td>
<td>CBJ Cow-1, 3 years Extensive papillomatous lesions (3-5 cm) throughout the body, n&gt;100</td>
<td>3 months</td>
<td>Severe,++++, Autohemotherapy</td>
</tr>
<tr>
<td>14</td>
<td>SAHC, Dalkhola</td>
<td>Pappu Ladda</td>
<td>Dalkhola</td>
<td>4791/23</td>
<td>18.10.12</td>
<td>CBJ HF-1, 2.5 years Small(1-2cm), hard club shaped warts on cheeks and neck, n&gt;30</td>
<td>5 months</td>
<td>Moderate,+++ Inj. Anthiomaline</td>
</tr>
<tr>
<td>15</td>
<td>SAHC, Dalkhola</td>
<td>Dilip Mahato</td>
<td>Subhaspally</td>
<td>4232/12</td>
<td>17.10.11</td>
<td>CBJ FC-11 Months Cluster of warts (3-5 cm) on axilla and at inner aspect of thigh (medial), n&gt;50</td>
<td>4 months</td>
<td>Severe,++++, Autohemotherapy</td>
</tr>
<tr>
<td>Case No.</td>
<td>Site</td>
<td>Names</td>
<td>Date of Birth</td>
<td>VC</td>
<td>Age</td>
<td>Clinical Details</td>
<td>Duration</td>
<td>Treatment Notes</td>
</tr>
<tr>
<td>---------</td>
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<td>-----------------</td>
</tr>
<tr>
<td>16</td>
<td>SAHC, Islampur</td>
<td>Sk. Salauddin Sonakhoda</td>
<td>3620</td>
<td>02.11.12</td>
<td>Gir HF-1, 2 years</td>
<td>Warts with broad base (6-8 cm) on back and axilla, n&gt;10</td>
<td>6 months</td>
<td>Moderate,++, surgical excision</td>
</tr>
<tr>
<td>17</td>
<td>SAHC, Islampur</td>
<td>Md. Zaminur Islam, Telivita</td>
<td>3542</td>
<td>31.10.12</td>
<td>CBJ FC-10 Months</td>
<td>Cauliflower like warts (4-5 cm) on right side of the face and middle of left ear pinna, n&gt;20</td>
<td>4 months</td>
<td>Moderate,++, Inj. Anthiomaline</td>
</tr>
<tr>
<td>18</td>
<td>ABAHC, Kaliaganj, at Kunur</td>
<td>Shaked Ali Sahapur</td>
<td>2609</td>
<td>01.12.2011</td>
<td>Sahiwal cow-1, 4 Years</td>
<td>Numerous, small (1-2 cm), dome shaped warts on all four teats, n&gt;15, TP only</td>
<td>6 months</td>
<td>Moderate,++, Inj. Anthiomaline</td>
</tr>
<tr>
<td>19</td>
<td>ABAHC, Kaliaganj, at Kunur</td>
<td>Manoda Roy Roypur</td>
<td>2671</td>
<td>03.12.2011</td>
<td>CBJ Cow-1, 3 years</td>
<td>Scattered, solid, horny papillomatous lesions on ears, head and trunk, n&gt;30</td>
<td>4 months</td>
<td>Moderate,++, Inj. Anthiomaline</td>
</tr>
<tr>
<td>20</td>
<td>ABAHC, Kaliaganj, at Kunur</td>
<td>Goutam Sarkar</td>
<td>2947</td>
<td>29.12.2011</td>
<td>Sahiwalcow-1, 4 Years</td>
<td>TP, affecting all four teats, n = 12</td>
<td>6 months</td>
<td>Moderate,++, Thuja orally</td>
</tr>
<tr>
<td>21</td>
<td>ABAHC, Kaliaganj, at Kunur</td>
<td>Hassan Ali Malgram</td>
<td>2950</td>
<td>29.12.2011</td>
<td>CBJ FC-1, 14 Months</td>
<td>Whole body papillomatosis (3-7 cm) (extensive lesions), n&gt;100</td>
<td>4 months</td>
<td>Severe, ++++, recovery by anthiomaline therapy</td>
</tr>
<tr>
<td>22</td>
<td>ABAHC, Kaliaganj, at Kunur</td>
<td>Jagdish Barman Kunor</td>
<td>1848</td>
<td>07.08.12</td>
<td>Gir HF-1, 19 Months</td>
<td>Diffuse, small (2-3 cm), cauliflower like warts on fore limbs and barrel only, n&gt;40</td>
<td>5 months</td>
<td>Moderate,++, Inj. Anthiomaline</td>
</tr>
<tr>
<td>23</td>
<td>ABAHC, Kaliaganj, at Kunur</td>
<td>Khalek Ali Dhabil</td>
<td>2226</td>
<td>01.09.12</td>
<td>ND MC-1, 14 Months</td>
<td>Confluent papillomatous lesions (3-5 cm) on hind limbs and ventral abdomen, n&gt;70</td>
<td>4 months</td>
<td>Severe,++++,Autohemotherapy</td>
</tr>
<tr>
<td>24</td>
<td>ABAHC, Kaliaganj, at Kunur</td>
<td>Nitai Sarkar Kunor</td>
<td>2252</td>
<td>04.09.12</td>
<td>CBJ Cow-1, 4 Years</td>
<td>Frond type warts (n&gt;10) on teat only(TP)</td>
<td>5 months</td>
<td>Moderate,++, Thuja orally</td>
</tr>
<tr>
<td>25</td>
<td>ABAHC, Kaliaganj, at Kunur</td>
<td>Mehebub Atom, Kunor, Mustafanagar</td>
<td>2305</td>
<td>06.09.12</td>
<td>CBJ FC-1, 12 Months</td>
<td>Cluster of warts (6-8 cm) on axillae, hip and medial aspect of the right thigh, n&gt;30</td>
<td>4 months</td>
<td>Moderate,++, Inj. Anthiomaline</td>
</tr>
<tr>
<td>26</td>
<td>ABAHC, Kaliaganj, at Kunur</td>
<td>Chaitanya Mahato Moheshpur</td>
<td>2816</td>
<td>10.10.12</td>
<td>ND Cow-1, 3 Years</td>
<td>TP(2-3 cm) involving teat base only, scattered frond type warts, n&gt;10</td>
<td>4 months</td>
<td>Mild,+,Thuja orally</td>
</tr>
<tr>
<td>27</td>
<td>ABAHC, Rampur, Raiganj-1, Subhashganj</td>
<td>Dhiren Roy Subhashganj</td>
<td>4119</td>
<td>20.02.13</td>
<td>CBJ HF-1,3 Years</td>
<td>Whole body papillomatosis (3-6 cm),n&gt;100</td>
<td>6 months</td>
<td>Severe,++++, Autothermotherapy and immunomodulation by injectable levamisole compound</td>
</tr>
<tr>
<td>28</td>
<td>ABAHC, Rampur, Raiganj-1</td>
<td>Sahidul Rahaman Rampur</td>
<td>3633</td>
<td>11.08.11</td>
<td>ND Cow-1,4 Years</td>
<td>Udder warts and teat base papilloma, n&lt;15</td>
<td>5 months</td>
<td>Moderate,++, Inj. Anthiomaline</td>
</tr>
<tr>
<td>29</td>
<td>ABAHC, Rampur, Raiganj-1</td>
<td>Kader Mohammad Bhattachadghi</td>
<td>3640</td>
<td>12.08.11</td>
<td>CBJ HF-1,2.5 years</td>
<td>Cauliflower like warts on gluteal region, perivulval region and hind limbs, n=10</td>
<td>6 months</td>
<td>Moderate,++, Inj. Anthiomaline</td>
</tr>
<tr>
<td>30</td>
<td>ABAHC, Rampur, Raiganj-1</td>
<td>Sadek Mohammad Bhattachadghi</td>
<td>4388</td>
<td>17.10.11</td>
<td>ND BK-1, 4 Years</td>
<td>Exophytic, hard horny pedunculated warts (5-8 cm) on back and neck , n = 8</td>
<td>5 months</td>
<td>Mild,+, Autohaemotherapy and surgery</td>
</tr>
<tr>
<td>31</td>
<td>ABAHC, Rampur, Raiganj-1</td>
<td>Sadur Mohammad Bhattachadghi</td>
<td>4724</td>
<td>11.11.12</td>
<td>HLX Cow-1, 3.5 Years</td>
<td>Rice grain type warts (2-3 cm) on all four teats, n&gt;20</td>
<td>6 months</td>
<td>Moderate,++, Inj. Anthiomaline</td>
</tr>
</tbody>
</table>
Table-66: Summary of Institutional survey of cutaneous wart (CWT) and teat papilloma (TP) in cattle and buffalo in Uttar Dinajpur District of West Bengal

<table>
<thead>
<tr>
<th>Breeds affected</th>
<th>No.of recorded clinical wart cases</th>
<th>Sex</th>
<th>Age group</th>
<th>No of CWT cases</th>
<th>No of TP cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indigenous and non-descript cattle</td>
<td>15</td>
<td>F-11</td>
<td>calf hood</td>
<td>1</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td></td>
<td>M-4</td>
<td>sub-adult</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Cross breed  cattle (CBJ)</td>
<td>15</td>
<td>F-14</td>
<td>adult</td>
<td>6</td>
<td>13</td>
</tr>
<tr>
<td></td>
<td></td>
<td>M-1</td>
<td>old</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Cross breed  cattle (PJ)</td>
<td>-</td>
<td>F</td>
<td></td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td>M</td>
<td></td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Cross breed  cattle (HLX)</td>
<td>1</td>
<td>F-1</td>
<td></td>
<td>1</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td>M</td>
<td></td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Buffalo</td>
<td>-</td>
<td>F</td>
<td></td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td>M</td>
<td></td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Grand Total</td>
<td>31</td>
<td>F-26</td>
<td></td>
<td>7</td>
<td>25</td>
</tr>
<tr>
<td></td>
<td></td>
<td>M-5</td>
<td></td>
<td>10</td>
<td>-</td>
</tr>
</tbody>
</table>
Table-67: Institutional survey on the recorded incidence of bovine papillomatosis in Dakshin Dinajpur District of West Bengal

<table>
<thead>
<tr>
<th>Sl No</th>
<th>Name of the centre</th>
<th>Name of the farmer</th>
<th>O.P. No</th>
<th>Date</th>
<th>Category of animal</th>
<th>Gross pathological observations</th>
<th>Duration of infection</th>
<th>Remarks on severity of affections</th>
</tr>
</thead>
<tbody>
<tr>
<td>DDP-1</td>
<td>BAHC Gangarampur Block</td>
<td>Dayabati Chetri, Schoolbari, Gangarampur</td>
<td>1537</td>
<td>27.06.2012</td>
<td>Sahiwal Male calf-1, 10 Months</td>
<td>Multiple cauliflower like warts on fore limbs and neck, n =20</td>
<td>4 Months</td>
<td>Moderate +++</td>
</tr>
<tr>
<td>DDP-2</td>
<td>BAHC Kushmondy Block</td>
<td>Sunil Sarkar, Madhyakeroi, Kushmondy</td>
<td>5922</td>
<td>02.02.2012</td>
<td>CBJ Cow-1, 3 years</td>
<td>Cauliflower like warts (3-4cm) on lower legs, n = 16</td>
<td>4 Months</td>
<td>Moderate +++</td>
</tr>
<tr>
<td>DDP-3</td>
<td>BAHC Kushmondy Block</td>
<td>Sunil Roy, Etulia, Kushmondy</td>
<td>8130</td>
<td>26.07.2012</td>
<td>Gir Cow-1, 4 years</td>
<td>Multiple nodular warts (2-5cm) on fetlock and gluteal region, n = 8</td>
<td>4 Months</td>
<td>Mild ++</td>
</tr>
<tr>
<td>DDP-4</td>
<td>ABAHC Trimohini, Hilly Block</td>
<td>Sunil Chakraborty Trimohini</td>
<td>7653</td>
<td>17.2.2012</td>
<td>Sahiwal Female calf-1, 12 Months</td>
<td>Multiple small (1-2 cm), sessile type warts on ears, around the eyes and neck, n = 15</td>
<td>6 Months</td>
<td>Moderate +++</td>
</tr>
<tr>
<td>DDP-5</td>
<td>ABAHC Mohupal, Kushmondy Block</td>
<td>Sourav Singha Kumartol</td>
<td>5789</td>
<td>8.10.2011</td>
<td>ND MC-1, 2 Years</td>
<td>Small (1-2 cm), solid, rough and fissured, horny, squat type warts on fore limbs and shoulder region only, n&gt;20</td>
<td>5 Months</td>
<td>Moderate ++</td>
</tr>
<tr>
<td>DDP-6</td>
<td>ABAHC Mohupal, Kushmondy Block</td>
<td>Sukumar Das Mohipal</td>
<td>6987</td>
<td>22.2.12</td>
<td>CBJ FC-1, 12 Months</td>
<td>Multiple (n&gt;20) squat type warts (2-3cm)around the eyes and ear pinnae</td>
<td>4 Months</td>
<td>Moderate +++</td>
</tr>
<tr>
<td>DDP-7</td>
<td>BAHC Potigram, Balurghat Block</td>
<td>Surjya Ghosh, Potigram</td>
<td>1204</td>
<td>29.5.2011</td>
<td>Gir HF-1, 3 Years</td>
<td>Multiple (n&gt;20) squat type, pedunculated warts (2-5 cm) around the eyes, eyelids, ear base, ear pinnae and thorax</td>
<td>6 Months</td>
<td>Moderate +++</td>
</tr>
<tr>
<td>DDP-8</td>
<td>BAHC, Potigram, Balurghat Block</td>
<td>Goutam Adhikary, Potigram</td>
<td>8752</td>
<td>9.3.2012</td>
<td>ND HF-1, 2.5 Years</td>
<td>Multiple Stalked cutaneous warts (3-5 cm) localized in the head, neck, back and muzzle region, n = 16</td>
<td>4 Months</td>
<td>Moderate ++</td>
</tr>
<tr>
<td>DDP-9</td>
<td>BAHC, Potigram, Balurghat Block</td>
<td>Bishnu Rai, Potigram</td>
<td>1297</td>
<td>19.6.2012</td>
<td>CBJ HF-1, 3 Years</td>
<td>Multiple cauliflower like warts (2-5 cm)on both the fore limbs, n = 15</td>
<td>6 Months</td>
<td>Moderate +++</td>
</tr>
<tr>
<td>DDP-10</td>
<td>BAHC, Potigram, Balurghat Block</td>
<td>Prem Tamang, Potigram</td>
<td>7639</td>
<td>26.11.2012</td>
<td>ND HF-1, 2.5 Years</td>
<td>Multiple cauliflower like warts (1-5 cm) on both side of the neck and inter scapular region, n&gt;20</td>
<td>5 Months</td>
<td>Moderate +++</td>
</tr>
</tbody>
</table>
Table-68: Breed, age group and sex wise synopsis of cutaneous wart (CWT) and teat papilloma (TP) in cattle and buffalo recorded in Veterinary clinics in the District of Dakshin Dinajpur

<table>
<thead>
<tr>
<th>Breeds affected</th>
<th>Total No. of wart cases</th>
<th>Sex</th>
<th>Age group</th>
<th>CWT cases</th>
<th>TP cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indigenous and non-descript cattle</td>
<td>7</td>
<td>F-5</td>
<td>Calf hood</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Sub-adult</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>M-2</td>
<td>Adult</td>
<td>-</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Old</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Cross breed cattle (CBJ)</td>
<td>3</td>
<td>F-3</td>
<td>Calf hood</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Sub-adult</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>M-0</td>
<td>Adult</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Pure exotic cattle</td>
<td>-</td>
<td>F</td>
<td>Calf hood</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Sub-adult</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>M</td>
<td>Adult</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Cross breed cattle (HLX)</td>
<td>-</td>
<td>F</td>
<td>Calf hood</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Sub-adult</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>M</td>
<td>Adult</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Buffalo</td>
<td>-</td>
<td>F</td>
<td>Calf hood</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Sub-adult</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>M</td>
<td>Adult</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Grand Total</td>
<td>10</td>
<td>F-8</td>
<td>Calf hood</td>
<td>3</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Sub-adult</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>M-2</td>
<td>Adult</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

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Table-69: Farm survey on gross clinicopathological observations on bovine and bubaline papillomatosis in organized sector in West Bengal

<table>
<thead>
<tr>
<th>Sl No</th>
<th>Name of the dairy farm</th>
<th>Survey period</th>
<th>Herd strength No. of animals screened</th>
<th>Cases of BP</th>
<th>Gross clinical observations</th>
<th>Duration, severity of infection &amp; treatment given</th>
<th>Incidence</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>R. K. Mission Dairy, Narendrapur, South 24 Parganas</td>
<td>2009</td>
<td>JY x HF=18, HF x S=11, JYX S= 19, HF x G=17, Total=65</td>
<td>MC-1(10 Months), HF-3(1-2 Years), C-1(3 Years) Total=5 (RKM-1:5);STP 109-STP 113 Multiple cauliflower like warts, n = 5, 2-3 cm (CCWT) on the skin of ear flap and face of a MC (RKM-1/JYXGir-051), on dorsal neck and chest of a HF, n=8, 2-4 cm (RKM-2/HFXS-173, 2 years), on face and muzzle of a HF, n=10, 2-3 cm (RKM-3/HFXS-203), on neck and front back of a HF, n=11, 2-3 cm (RKM-4/HFXG-239), on abdomen and thigh of a cow (RKM-5/JYXS-242), n = 14, size = 2-4cm</td>
<td>4-5months,Mild to moderate grade infection, S/C administration of Ivermectin for mild grade infection and autohemotherapy for moderate grade infection</td>
<td>7.7%</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>R. K. Mission Dairy, Narendrapur, South 24 Parganas</td>
<td>2010</td>
<td>JY HF=21, HF x S=15, JY X S= 23, HF x G=21, Total=80</td>
<td>HF-2(1.5-2 Years) Total=2(RKM 6-7);STP 114-STP 115 Multiple cauliflower like warts, n = 3, 2-3 cm(CCWT) on the head and ears (RKM-6/HFXS-123),ears and around the eyes (peri orbital warts), n = 5, 2-3 cm (RKM-7/HFXG-202)</td>
<td>3-4 months, mild grade infection, S/C administration of Ivermectin</td>
<td>5.0%</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>R. K. Mission Dairy, Narendrapur, South 24 Parganas</td>
<td>2011</td>
<td>JY HF = 21, HF x S =15, JY X S= 26, HF x G=25, Gir-10, Total=97</td>
<td>HF-3(1-2 Years) Total CWT-3(RKM 8-10);STP 116-STP 118 Multiple small cauliflower like warts (CCWT) on ears, face and muzzle (RKM-8/JYXGir-043), ear flaps, pole region and neck (RKM-9/SXHF-145), Legs and extremities ( RKM-10/G-234) n = 2-5, size =1-3cm (average)</td>
<td>3-4 months, mild grade infection, parenteral administration of Anthiomaline</td>
<td>4.12%</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>R. K. Mission Dairy, Narendrapur, South 24 Parganas</td>
<td>2012</td>
<td>JY HF=24, HF x S=15, JY X S= 23, HF x G=20, Total=82</td>
<td>HF-4 (1-2.5 Years), C-3(3-4 Years) Total = 7 (RKM 11-17); STP 119-STP 125 Small to medium size, cauliflower like warts in heifers (n=12, 1-3 cm) on ears, face and neck (RKM-11/JYXS-221), muzzle and face (RKM-12/HFXS-237, n=14, 2-3 cm), head and shoulder (RKM-13/JYXGir-121, n=10, 2-3 cm) and inter-scapular region (RKM-14/JYXGir-076, n=21, 1-2 cm): pedunculated warts in cows, at poll region (RKM-15/ JYXGir-103, n=4,2-3 cm),skull region (RKM-16/GirXHF-156, n=5, 3-4 cm), and neck region (RKM-17/ GirXHF-034, n=15, 2-3 cm)</td>
<td>2 -5months,Mod erate grade infection, either S /C administration of Ivermectin or autohemotherapy</td>
<td>8.5%</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>State Livestock Farm(SLF), Kalyani, Nadia: Unit no-9</td>
<td>2008 (Dec’08)</td>
<td>Seized &amp; confiscated indigenous, ND and cross bred animals, Total=139</td>
<td>HF-2(1-2 Years), MC-1(1 Year), C-2(3-4 Years) Total = 5 (SLF 1-5);NDA 147-NDA 151 Heifers (1X BH-543 &amp; 1XFJ-485) bearing fleshy, firm, cauliflower like warts (n=5-10, size 2-3 cm) on hind limbs, MC (1XFJ-670) bearing multiple (n=12) scattered small cauliflower (size 1-2 cm) like warts on head, face and ear base, Haryana cows (HY-262 &amp;765) bearing wart like flat, round, elevated lesions (n=10-15, size 1-2cm) on hind limbs pre-femoral region, stifle and flank region</td>
<td>3-5 Months, Moderate grade infection, S /C administration of Ivermectin and autohemotherapy</td>
<td>3.70%</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>State Livestock Farm(SLF), Kalyani, Nadia:</td>
<td>2009 (July’09)</td>
<td>Seized &amp; confiscated indigenous, ND and cross bred animals, Total=155</td>
<td>HF-2(1-2 Years), FC-1(11 Months) &amp; Cow-2 (3-3.5 Years) Heifers bearing multiple lesions (n = 5-16, size 2-3cm) on ear flaps, head and neck (2XHJ-45), neck and thorax (3XHJ-01), FC (4XHJ-65) bearing proliferative warty growths (n=16, size 4-6 Months, Mild to moderate grades of infection, Treated by auto hemotherapy and antimony</td>
<td>3.22%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unit no-9</td>
<td>Total=5 (SLF 6-10);NDA 152-NDA 156</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>2 (3) State Livestock Farm(SLF), Kalyani, Nadia: Unit no-9</td>
<td>2009 (Dec’09) Seized &amp; confiscated indigenous, ND and cross bred animals, Total=157</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 (4) State Livestock Farm(SLF), Kalyani, Nadia: Unit no-9</td>
<td>2010 (July’10) Seized &amp; confiscated indigenous and cross bred cattle, Total=105</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 (5) State Livestock Farm(SLF), Kalyani, Nadia: Unit no-9</td>
<td>2010 (Dec’10) Seized &amp; confiscated indigenous and cross bred cattle, Total=105</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 (6) State Livestock Farm(SLF), Kalyani, Nadia: Unit no-9</td>
<td>2009 (June-2009) Seized and confiscated animals :Indigenous(Gir-20,Haryana-20), ND-12 and cross bred (XJ-75, HLX-28)animals, Total=165</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>2 (7) State Livestock Farm(SLF), Kalyani, Nadia: Unit no-9</td>
<td>2009 Dec-2009 Seized , confiscated and farm bred animals :indigenous(Gir-20,Haryana-20), ND-12 and cross bred (XJ-75, HLX-38)animals, Total=175</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>2 (8) State Livestock Farm(SLF), Kalyani, Nadia: Unit no-11</td>
<td>2010 Seized and confiscated and farm bred animals :indigenous(Gir-10,Haryana-20), ND-10 and cross bred (XJ-85, HLX-32)animals, Total=157</td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Unit no-11</th>
<th>1-3cm) on ear pinnae, ventral part of right neck and around eyes , HLX -592 and HLX-123 cow bearing large sized multiple warts in cluster (n=10-15, size =3-4cm) on right axilla.</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 (3) State Livestock Farm(SLF), Kalyani, Nadia: Unit no-11</td>
<td>MC-(X 1016) bearing scattered lesions (n=30, size=1-3 cm) on ear flaps, head, neck, face and front lower limbs, FC (1 X HJ-42) bearing cauliflower like warts on face and muzzle (n=15, 2-5 cm) and FC (2 × HJ 262) bearing stalked scattered lesions (n=16, 2-4 cm) on ear pinnae, head, neck and fore limbs.</td>
</tr>
<tr>
<td>2 (4) State Livestock Farm(SLF), Kalyani, Nadia: Unit no-11</td>
<td>Heifers (X 609) bearing multiple sessile type warts (n=10, size=2-4 cm) on face, neck and fore limbs,multiple cauliflower like warts on hind limbs (1 × FJ-390, n=20, size 3-4 cm) and stalked warts on poll and neck region (4× FJR-1, n=14, size 2-5 cm)</td>
</tr>
<tr>
<td>2 (5) State Livestock Farm(SLF), Kalyani, Nadia: Unit no-11</td>
<td>FC-(XHJ-42) bearing sessile type warts (n=12, size=1-4 cm) on head and eyes, 2XHJ-43, bearing small cauliflower like warts (n=20, size=1-3cm) on eyes and ears, heifers (1XFJ-671, n = 16, size 2-5 cm and 1X BJR-234, n = 12, size 2-3 cm) bearing cauliflower like warts on head and shoulder and hind limbs respectively</td>
</tr>
<tr>
<td>2 (6) State Livestock Farm(SLF), Kalyani, Nadia: Unit no-11</td>
<td>Heifers (2XHJ-45, 3XHJ-65) bearing hard, horny cauliflower like warts (n = 5-10, size =3-5 cm) on hind limbs , (2XFH-15&amp;3XEH-65) bearing stalked, nodular warts on head, neck and thorax (n=10-15, size = 2-3 cm),MC(HLX-063) bearing multiple (n=12) scattered small cauliflower (size 1-2 cm)like warts on head, face and ear base and flap and one Haryana cow bearing wart like flat, round, elevated lesions (n = 3-5, size =1-2cm)on hind limbs ,pre-femoral region, stifle and flank region</td>
</tr>
<tr>
<td>2 (7) State Livestock Farm(SLF), Kalyani, Nadia: Unit no-11</td>
<td>Heifers bearing multiple lesions (n=5-16, size = 2-3cm) on head, neck and thorax (1XHJ-18),on inter scapular region (3XHJ-5), around the eyes (XJ-597),FC (HLX-43) bearing proliferative warty growths on lesions (n=16, size 1-3cm)on aural pinna, ventral part of right neck and around eyes , HLX cow(3XEH-65) bearing a large sized multiple warts in cluster (n=10, size 3-4cm) on right axilla</td>
</tr>
<tr>
<td>2 (8) State Livestock Farm(SLF), Kalyani, Nadia: Unit no-11</td>
<td>FC(2XHJ-1) bearing scattered lesions (n=30, size =1-3 cm) on head, neck, face and front lower limbs, cows (XJ-810, 1XFJ-524) bearing fronite type lesions (n=10-15, size =1.5-2.5 cm) on all four limbs and ear flaps</td>
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<tr>
<td>2 State Livestock Farm</td>
<td>Multiple sessile type warts (n=10, size=2-4 cm) on ear</td>
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<thead>
<tr>
<th>Results</th>
<th>237</th>
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<td>Farm(SLF), Kalyani, Nadia: Unit no-11</td>
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<td>State Livestock Farm(SLF), Kalyani, Nadia: Unit no-11</td>
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<tr>
<th>S.No</th>
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<th>Description</th>
<th>Details</th>
<th>Treatment</th>
<th>Remarks</th>
</tr>
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<tbody>
<tr>
<td>2 (16)</td>
<td>State Livestock Farm (SLF), Kalyani, Nadia: Unit no-12</td>
<td>2010 June-2010</td>
<td>Seized, confiscated and farm bred water buffaloes (ND, Murrah, Surti and CB Buffaloes) Total=78</td>
<td>BFHF-2 (3-4 Years), BFHC-1 (12 Months), BFMC-1 (14 Months), Milch BF-1 (8 Years); Total Wart cases= BCWT-4 &amp; BTP-1=5 (SLF 62-66) : NDA 208-NDA 212</td>
<td>Multiple cauliflower like warts (CWT) in BFHF, on the ears, Poll and face region, n=8, size 2-3 cm (DB-478), head, eyes and ear flaps (DB-345), n=7, size 2-3 cm, in BFHC, squat type warts on fore limbs, n=8, size 3-4 cm (DB-538), on scrotal sack, n=22, size 1-2 cm (DB-539) and Frond type TP (n=7, size 1-2 cm, on udder and teats in a milch BF (DB-450)</td>
<td>3-5 months, moderate grades of infection, treated by S/C administration of autogenous vaccine</td>
</tr>
<tr>
<td>2 (17)</td>
<td>State Livestock Farm (SLF), Kalyani, Nadia: Unit no-12</td>
<td>2009 (July-09)</td>
<td>Seized, confiscated and farm bred cattle (ND-10, Gir-12, CBJ-60, HY-21, HLX-34): Total=137</td>
<td>HMRC-1 (12 Months)</td>
<td>MC (2XHJ-12) bearing pedunculated warts (n=12, size 2-5 cm) on ear pinnae, head, neck and front back</td>
<td>4-5 Months, moderate grades of infection, treated by auto hemotherapy and parental administration of anthiomaline and Ivermectin</td>
</tr>
<tr>
<td>2 (18)</td>
<td>State Livestock Farm (SLF), Kalyani, Nadia: Unit no-12</td>
<td>2009 (Dec-09)</td>
<td>Seized and confiscated cattle: Indigenous (Gir-10, Haryana-10), ND-12 and cross bred (XJ-88, HLX-08) animals, Total=128</td>
<td>CBHF-2 (1-2 Years) Total Wart cases= 2 (SLF 68-69) : NDA 214-NDA 215</td>
<td>HF (X597) bearing cauliflower like warts on eyes and ears (n=15, size 3-6 cm), around eyes and inter scapular region (2XHJ-46) pedunculated warts (n=20, size 2-4 cm)</td>
<td>3-5 months, moderate grades of infection, treated by S/C administration of Ivermectin and autohemotherapy</td>
</tr>
<tr>
<td>2 (19)</td>
<td>State Livestock Farm (SLF), Kalyani, Nadia: Unit no-12</td>
<td>2010 (July-10)</td>
<td>Seized and confiscated cattle: Indigenous (Gir-15, Haryana-13), ND-10 and cross bred (XJ-97, HLX-11) animals, Total=146</td>
<td>CBJ HF-2 (1-3 Years), ND C-1 (C-14 Years) Total wart cases= CWT-3 (SLF 70-72) : NDA 216-NDA 218</td>
<td>ND cow (C-196) bearing cauliflower like warts (n=16, size 3-5 cm) on axillae and tail base, HF (XJ-904 &amp; 1XJF-303) bearing squat type warts on fore limbs and thoracic region (n=12-25, size 2-5 cm) respectively</td>
<td>3-4 months, moderate grade infection, treated by S/C and autohemotherapy and antimony compound</td>
</tr>
<tr>
<td>2 (20)</td>
<td>State Livestock Farm (SLF), Kalyani, Nadia: Unit no-12</td>
<td>2010 (Dec-10)</td>
<td>Seized and confiscated cattle: Indigenous (Gir-15, Haryana-13), ND-08 and cross bred (XJ-105, HLX-18) animals, Total=159</td>
<td>CB HF-2 (2-3 Years) Total wart cases= CWT-2 (SLF 74-75) : NDA 219-NDA 220</td>
<td>HF (4XJF-649) bearing hard horny cauli-flower like warts on face, eyes and ears (n=26, size 2-4 cm), on fore limbs and inter scapular region (2XBH-712) cauliflower like warts (n=15, size 2-5 cm)</td>
<td>4-6 Months, Mild to moderate grades of infection, Treated by auto hemotherapy and anthiomaline compound</td>
</tr>
<tr>
<td>2 (21)</td>
<td>State Livestock Farm (SLF), Kalyani, Nadia: Unit no-12</td>
<td>2011 (July-11)</td>
<td>Seized and confiscated cattle: Indigenous (Gir-11, Haryana-07), ND-10 and cross bred (XJ-112, HLX-11) animals, Total=151</td>
<td>CB HF-2 (2-3 Years) Total wart cases= CWT-2 (SLF 76-77) : NDA 221-NDA 222</td>
<td>HF (1XBR-70) bearing small cauliflower like warts (n=20, size 2-3 cm) and squat type warts (n=16, size 2-4 cm) on back and belly, on hind limbs (2XBJ-617)</td>
<td>3-5 months, moderate grades of infection, treated by S/C administration of autogenous vaccine</td>
</tr>
<tr>
<td>2 (22)</td>
<td>State Livestock Farm (SLF), Kalyani, Nadia: Unit no-12</td>
<td>2011 (Dec-11)</td>
<td>Seized and confiscated cattle: Indigenous (Gir-19, Haryana-09), ND-7 and cross bred (XJ-102, HLX-9) animals, Total=146</td>
<td>CB HF-2 (2-3 Years) Total wart cases= CWT-2 (SLF 78-79) : NDA 223-NDA 224</td>
<td>HF (1XJF-569) bearing sessile type warts on and around eyes and ears and neck region, on fore limbs and thorax and HF (1XFH-355) small cauli flower like warts (n=21, size 2-3 cm)</td>
<td>3-4 months, moderate grade infection, treated by S/C administration of Ivermectin and autohemotherapy</td>
</tr>
<tr>
<td>2 (23)</td>
<td>State Livestock Farm (SLF),</td>
<td>2012 (July-12)</td>
<td>Seized and confiscated cattle: Indigenous (Gir-19, Haryana-09), ND-7 and cross bred (XJ-102, HLX-9) animals, Total=146</td>
<td>CBHF-2 (1-2 Years) Total wart cases= CWT-2 (SLF 78-79) : NDA 223-NDA 224</td>
<td>HF (2XFH-168) bearing pedunculated warts (n=24, size 3-4 cm) on neck and fore limbs, HF(1XFH-362) bearing CWT on eye</td>
<td>4-6 Months, Mild to moderate grades of infection, Treated by auto hemotherapy and parental administration of anthiomaline and Ivermectin</td>
</tr>
<tr>
<td>Results</td>
<td>2 (24)</td>
<td>State Livestock Farm (SLF), Kalyani, Nadia: Unit no-12</td>
<td>2012 (Dec-12)</td>
<td>Seized, confiscated and farm bred animals: indigenous (Gir-10, Haryana-12); ND-20 and cross bred (XJ-95, HLX-22) animals, Total=159 lids and ear pinnae (n=12, size 2-4 cm)</td>
<td>CBHF-3 (2-3 Years) &amp; CBC-1 (4 Years) = CWT-4 (SLF 82-85): NDA 227-230</td>
<td>3-5 months, moderate grades of infection, treated by S/C administration of Levamisole and antimony compound</td>
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<tr>
<td>Results</td>
<td>3 (1)</td>
<td>Bull Mother Farm, PBGSBS, Haringhata, Nadia</td>
<td>2009 (July-09)</td>
<td>Indigenous cattle herd (Gir and sahiwal), Total=376 Pedunculated tumoral masses. Seen on head region, ear and around eyes (S-1640), n =12,1-2cm, around the eyes, ear flaps, noses and brow (S-222, n=10, 2-3cm), inter scapular region and thorax (G-432, n=16, 3-4 cm), neck region (G-40) (n=5-20, size 1-10cm)</td>
<td>GHF-2 (2-4 Years), SHF-1 (3 Years) = Total CWT-4 (PBGSBS 1-4): NDA 231-234</td>
<td>3-4 months, moderate grade infection, treated by S/C administration of Ivermectin and autohemotherapy</td>
</tr>
<tr>
<td>Results</td>
<td>3 (2)</td>
<td>Bull Mother Farm, PBGSBS, Haringhata, Nadia</td>
<td>2009 (Dec-09)</td>
<td>Indigenous cattle herd (Gir-94 and sahiwal-299), S Milch-89, Dry-100, SHF-64, SFC-68, SMC-42, G Milch-22, Dry-18, GHF-20, GFC-21, GMC-13; Total=393 Solitary cauliflower-like sessile type wart (5cm 11 cm) on right ear (G-219), multiple pedunculated tumoral masses (n=12, 1-4 cm) on head and inter-scapular region (S-933) and sessile type warts (n=15, 2-6 cm) on neck, fore limbs and thorax (G-381)</td>
<td>GHF-2 (2-4 Years), SHF-1 (3 Years) = Total CWT-3 (PBGSBS-5-7): NDA 235-237</td>
<td>4-5 Months, Mild to moderate grades of infection, Treated by auto hemotherapy and antimony compound</td>
</tr>
<tr>
<td>Results</td>
<td>3 (3)</td>
<td>Bull Mother Farm, PBGSBS, Haringhata, Nadia</td>
<td>2010 (July-10)</td>
<td>Indigenous cattle herd (Gir-sahiwal and Others), Total=463 Multiple cauliflower-like shaped tumour masses (n=20, 2-5cm) on poll region, around ear and eyes (S-5692), around the ears and noses (S-56960, n=12, 2-3), neck and thorax (G-724, n=7, 3-4cm)</td>
<td>SHF-2 (2-3 Years) &amp; GMC-1 (12 Months) (CWT-3):PBGSBS 8-10: NDA 238-240</td>
<td>3-5 months, moderate grades of infection, treated by S/C administration of Ivermectin and autohemotherapy</td>
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<tr>
<td>Results</td>
<td>3 (4)</td>
<td>Bull Mother Farm, PBGSBS, Haringhata, Nadia</td>
<td>2010 (Dec-10)</td>
<td>Indigenous cattle herd (Gir-119, sahiwal-465 and others-14), S Milch-89, Dry-100, SHF-64, SFC-144, SMC-68, G Milch-22, Dry-18, GHF-20, GFC-21, GMC-18; Total=596 Stalked warts on ear pinna and at the base of the ears (S-303, n=16, 2-3cm), posterior aspect of thigh and at ear base (G-8, n=21, 2-2.5 cm), around eyes and eye lids, one growth at hump (G-239, n=18, 2-3 cm)</td>
<td>SC-01 (4 Years), &amp; G HF-02 (2-3 Years) (CWT-3):PBGSBS 11-13: NDA 241-243</td>
<td>4-5 Months, moderate grades of infection, treated by auto hemotherapy and parental administration of anthamoline and Ivermectin</td>
</tr>
<tr>
<td>Results</td>
<td>3 (5)</td>
<td>Bull Mother Farm, PBGSBS, Haringhata, Nadia</td>
<td>2011 (July-11)</td>
<td>Indigenous cattle herd (Gir-123, sahiwal-479 and others-14), S Milch-93, Dry-105, SHF-64, SFC-145, SMC-72, G Milch-25, Dry-18, GHF-20, GFC-22, GMC-18, others-14; Total=616 Small slender growths on lower back (S-56432, n=5, 1-1.5cm), cauliflower like growth above the base of the tail (S-56845, n=6, 2-3 cm), wart like growths on and around the vulva (S-G-26453, n=10, 2-4 cm)</td>
<td>SHF-2 (2-2.5 Years) &amp; GHF-1 (3 Years) (CWT-03):PBGSBS 14-16: NDA 244-246</td>
<td>3-4 months, moderate grade infection, treated by S/C administration of Ivermectin and autohemotherapy</td>
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<tr>
<td>No.</td>
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<td>3</td>
<td>Bull Mother Farm, PBGSBS, Haringhata, Nadia</td>
<td>2011 (Dec-11)</td>
<td>Indigenous cattle herd (Gir-119, sahiwal-465 and others-12, S Milch-89, Dry-100, SHF-64, SFC-144, SMC-68, G Milch-22, Dry-18, GHF-20, GFC-21, GMC-18)</td>
<td>Wart like lesions (squat type) at left axilla and ventral abdomen (G-2751, n=12, 2-3 cm), Minute growths on back (G-402, n=15, 0.5-1 cm)</td>
<td>3-4 months, moderate grade infection, treated by Autogenous vaccine</td>
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<td>3</td>
<td>Bull Mother Farm, PBGSBS, Haringhata, Nadia</td>
<td>2012 (July-12)</td>
<td>Indigenous cattle herd (Gir-157 and sahiwal-404, S Milch-99, Dry-121, SHF-74, SFC-78, SMC-32, G Milch-34, Dry-28, GHF-40, GFC-32, GMC-23)</td>
<td>Lamp lesions n=12; 1-2 cm, on skin of abdomen and neck (G-70024), cauliflower like lesions n=15, 2-3 cm, on back and axilla (G-709614), mixed lesions with irregular morphology n=21, 2-3 cm, on head, neck and around the eyes (G-9658)</td>
<td>3-4 months, moderate grade infection, treated either by S/C administration of Ivermectin and autohemotherapy</td>
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<tr>
<td>3</td>
<td>Bull Mother Farm, PBGSBS, Haringhata, Nadia</td>
<td>2012 (Dec-12)</td>
<td>Indigenous cattle herd (Gir-100, sahiwal-510 and others-23, S Milch-105, Dry-89, SHF-124, SFC-130, SMC-62, G Milch-15, Dry-17, GHF-37, GFC-25, GMC-6, Others Dry-2, Heifer-3, FC-10, MC-8)</td>
<td>Small cauliflower like growth on face and ear pinna (S-2748, n=15, 2-3 cm), Nose and around eye, base of tail and left thigh (G-432, n=21, 2-4 cm), Ear base and lower eye lid (S-2775, n=8, 2-3 cm)</td>
<td>4-6 Months, Mild to moderate grades of infection, Treated by auto hemotherapy and antimony compound</td>
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<tr>
<td>4</td>
<td>Haringhata Govt. Dairy Farm, Nadia</td>
<td>2009 (July-09)</td>
<td>Indigenous and cross bred cattle=432</td>
<td>Wart like growth, n=15, 2-3 cm, on the hind legs (HLF3-01), posterior aspect of thigh and base of the tail (5X-308, n=12-2-4 cm), left side of lower abdomen (JXF4-6740, n=10, 2-3 cm)</td>
<td>3-5 months, moderate grades of infection, treated by S/C administration of Ivermectin and autohemotherapy</td>
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</tr>
<tr>
<td>4</td>
<td>Haringhata Govt. Dairy Farm, Nadia</td>
<td>2009 (Dec-09)</td>
<td>Indigenous and cross bred cattle=463</td>
<td>Cauliflower like growth on whole body (DJF3-6736, n&gt;100, 0.5 to 4 cm), around scrotum and inner aspect of thigh (JXF2-007, n=23, 2-3 cm), base of ear and ear flaps (HL6X-139, n=10, 2-3 cm), Extensive growth on the ear pinna (5X-307, n=40, 1-4 cm)</td>
<td>4-5 Months, moderate grades of infection, treated by auto hemotherapy and parental administration of anthionline and Ivermectin</td>
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<td>4</td>
<td>Haringhata Govt. Dairy Farm, Nadia</td>
<td>2010 (July-10)</td>
<td>Indigenous and cross bred cattle=601</td>
<td>Small slender growth on the lower back (CBJ-131, n=13, 3-5 cm), squat type warts on ear pinnae and hind limbs (4X-564, n=16, 1-3 cm), posterior aspect of the thigh and perineal region (DJF2-2977, n=21, 2-4 cm)</td>
<td>3-4 months, moderate grade infection, treated by S/C administration of Ivermectin and autohemotherapy</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Haringhata Govt. Dairy Farm, Nadia</td>
<td>2010 (Dec-10)</td>
<td>Indigenous and cross bred cattle=388</td>
<td>Cauliflower like warts (n=24) of variable sizes (1-6 cm) on head, neck and barrel (CBJ-2876, n=32, 1-4 cm), squat type coarse textured warts on fore limbs and thorax (5X-311), Dome shaped warts</td>
<td>4-6 Months, Mild to moderate grades of infection, Treated by auto hemotherapy and antimony</td>
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Results
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<tr>
<th>Year</th>
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<tr>
<td>2011</td>
<td>Haringhata</td>
<td>Indigenous and cross bred cattle</td>
<td>363</td>
<td>Pedunculated cauliflower like warts on ear flaps, head, neck and inter scapular region (CBI-292, n=14, 2-3 cm), sessile type warts on interscapular region (DIF-20297, n=12, 1-3 cm)</td>
<td>3-5 months, moderate grades of infection, treated by S/C or oral administration of Levamisole</td>
<td>0.55%</td>
</tr>
<tr>
<td>2011</td>
<td>Haringhata</td>
<td>Indigenous and cross bred cattle</td>
<td>374: Murrah Buffalo-54</td>
<td>Variable sized (2-4 cm) multiple sessile type warts around the eyes, ears, noses and brow (HL 6X-131, n=18), pedunculated, small cauliflower like warts on ear pinnae, ear base and neck (6X-136), Dome shaped warts on tail base and paragenital region (B-2742, n=6, 3-4 cm)</td>
<td>3-4 months, moderate grade infection, treated by S/C administration of Ivermectin and autohemotherapy</td>
<td>0.70%</td>
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<tr>
<td>2012</td>
<td>Haringhata</td>
<td>Indigenous and cross bred cattle</td>
<td>357</td>
<td>Solitary wart on poll region (G-70023), multiple cauliflower like warts on thorax and both sides of the barrel (CBI-2844)</td>
<td>4-6 Months, Mild to moderate grades of infection, Treated by autohemotherapy and antimony compound</td>
<td>0.56%</td>
</tr>
<tr>
<td>2012</td>
<td>Haringhata</td>
<td>Indigenous and cross bred cattle</td>
<td>379</td>
<td>Small cauliflower like warts on ear and around the eyes and left upper eye lid (DJF2-2861, n=13, 2-3 cm), grey white cauliflower shaped warts around the vulva (7X-43, n=4, 3-5 cm)</td>
<td>3-5 months, moderate grades of infection, treated by S/C administration of Ivermectin and autohemotherapy</td>
<td>0.52%</td>
</tr>
<tr>
<td>2009</td>
<td>CPS, Goushala, Anandanagar, Gayespur, Nadia</td>
<td>Indigenous, non descript and cross bred cattle</td>
<td>567</td>
<td>Cauliflower like growths of varying sizes (0.5-11 cm) on head region (WB0909B-0042, n=14, 2-3 cm), solitary sessile type wart on ear and lower neck (WB0909B-0054, n=1, 6 cm), peri orbital warts around eyes and right upper eye lid (WB0909B-0042, n=11, 2-4 cm)</td>
<td>4-5 Months, moderate grades of infection, treated by autohemotherapy and parental administration of anthiomaline and Ivermectin</td>
<td>0.52%</td>
</tr>
<tr>
<td>2009</td>
<td>CPS, Goushala, Anandanagar, Gayespur, Nadia</td>
<td>Indigenous, non descript and cross bred cattle</td>
<td>579</td>
<td>Small cauliflower like warts on left side of lower abdomen (WB0909A843, n=12, 1-3 cm), Small slender growth on ear flaps and lower neck (WB0909B-0097, n=4, 1-1.5 cm), warts with irregular morphology on posterior aspect of the thigh and at base of tail (WB0909C-0965, n=15, 2-4 cm)</td>
<td>3-4 months, moderate grade infection, treated by S/C administration of Ivermectin and autohemotherapy</td>
<td>0.51%</td>
</tr>
<tr>
<td>2010</td>
<td>CPS, Goushala, Anandanagar, Gayespur, Nadia</td>
<td>Indigenous, non descript and cross bred cattle</td>
<td>588</td>
<td>Extensive warty growth on the ear pinna (WB0909B 0089, n=12, 2-3 cm), small cauliflower like warts on nose and around eye (WB0909B 0060, n=14, 2-3 cm), large cauliflower like wart at the base of the tail (WB0909B0147, n=01, 5 cm)</td>
<td>4-6 Months, Mild to moderate grades of infection, Treated by autohemotherapy and antimony compound</td>
<td>0.51%</td>
</tr>
<tr>
<td>2010</td>
<td>CPS, Goushala, Anandanagar, Gayespur, Nadia</td>
<td>Indigenous, non descript and cross bred cattle</td>
<td>674</td>
<td>Small cauliflower like warts on the back and barrel (WB0909A 00123, n=11, 3-4 cm), two growths on sacral region (WB0909A432, n=2, 4&amp;5 cm) cauliflower like growths on whole body (WB0909A324, n=100, 1-5 cm)</td>
<td>3-5 months, moderate grades of infection, treated by S/C administration of Ivermectin and autohemotherapy</td>
<td>0.44%</td>
</tr>
<tr>
<td>2011</td>
<td>CPS, Goushala, Anandanagar,</td>
<td>Indigenous, non descript and cross bred cattle</td>
<td>590</td>
<td>Small cauliflower like warts on upper eye lids, ear pinna, and at the base of the ear (WB0909A0236, n=32, 2-4 cm) extensive</td>
<td>4-5 Months, moderate grades of infection, treated by auto</td>
<td>0.33%</td>
</tr>
<tr>
<td>Gayespur, Nadia</td>
<td>CWT-02 (CPS 13-14) : NDA 290-NDA 291</td>
<td>growth on lower abdomen (WB0909B0087, n=50, 1-4 cm)</td>
<td>hemotherapy and parental administration of antiomalone and Ivermectin</td>
<td></td>
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<tr>
<td>5</td>
<td>CPS, Goushala, Anandanagar, Nadia</td>
<td>Indigenous, non descript and cross bred cattle =545</td>
<td>Extensive irregular Small cauliflower like warts on the ears and face (WB0909C0145,n=46,1-3 cm), ear flaps, neck and dewlap (WB0909A1230, n=23, 1-4 cm), solitary blackish dome shaped wart on the ear pinnia(WB0909B098, n=1, 5 cm), caulilflower like warts on the hind leg (WB0909C0087, n =25, 1-4 cm)</td>
<td>3-4 months, moderate grade infection, treated by S/C administration of Ivermectin and autohemotherapy</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>CPS, Goushala, Anandanagar, Nadia</td>
<td>Indigenous, non descript and cross bred cattle =567</td>
<td>Extensive cauliflower like wart around eyes and ears(WB0909A0876,n=32, 2-4cm), dome shaped warts on fore limbs and thorax(WB0909A00856,n=16, 1-3 cm), nodular warts on the back and hind limbs(WB0909B00765,n =21, 1-4 cm)</td>
<td>4-6 Months, Mild to moderate grades of infection, Treated by auto hemotherapy and antimony compound</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>CPS, Goushala, Anandanagar, Nadia</td>
<td>Indigenous, non descript and cross bred cattle =523</td>
<td>Solitary blackish dome shaped wart on left hind leg(WB0909B0269,a=01.4 cm), extensive irregular cauliflower like growth on face, dorsal neck and thorax(WB0909B0432,n=54,1-4 cm), cauliflower like wart on hind legs and at anal periphery(WB0909A0169, n=22, 1-4 cm)</td>
<td>3-5 months, moderate grades of infection, treated by S/C administration of Ivermectin and autohemotherapy</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>CPS, Goushala, Lilua, Howrah</td>
<td>Indigenous, non descript and cross bred cattle =665</td>
<td>Rough greyish and blackish coloured dome shaped warts on face, dorsal neck and thorax(WB0909B0432,n=17.2-4 cm), flesh coloured cauliflower like masses on perivulval region (2VR-F-964,a=16, 3-4 cm)</td>
<td>4-5 Months, moderate grades of infection, treated by auto hemotherapy and parental administration of antiomalone and Ivermectin</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>CPS, Goushala, Lilua, Howrah</td>
<td>Indigenous, non descript and cross bred cattle =678</td>
<td>Elevated, dome shaped warts on poll region, face and neck(WB0909C00189,n=38,1-4 cm), extensive cauliflower like growths on ears, face and neck(WB0909C0065,n=76, 1-3 cm), multiple coalescing exuberant growth with blackish coarse appearance on head, neck and belly(WB0909B00145,n=21, 1-3 cm)</td>
<td>3-4 months, moderate grade infection, treated by S/C administration of Ivermectin and autohemotherapy</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>CPS, Goushala, Lilua, Howrah</td>
<td>Indigenous, non descript and cross bred cattle =707</td>
<td>Multiple small cauliflower like growths on fore limbs(WB0909B0023,n=32, 1-3 cm), irregular squat type warts on eyelid and back(WB0909C0032,n=13, 1-3 cm)</td>
<td>4-6 Months, Mild to moderate grades of infection, Treated by auto hemotherapy and antiomalone and Ivermectin</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>CPS, Goushala, Lilua, Howrah</td>
<td>Indigenous, non descript and cross bred cattle =605</td>
<td>Small cauliflower like growth on neck, thorax and back(WB0909C0103,n=13,1-3 cm), small slender filliform growths on the hind legs(WB0909A00214, n=16,2-5cm), small irregular hard horny warts on back and hump region(WB0909C0034, n=8,2-3cm), extensive cauliflower like growth on posterior aspect of the thigh and tail base(WB0909C0121,a=28,1-2cm)</td>
<td>3-5 months, moderate grades of infection, treated by S/C administration of Ivermectin and autohemotherapy</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Results**: 243
<table>
<thead>
<tr>
<th>No.</th>
<th>CPS, Goushala, Lilua, Howrah</th>
<th>Date</th>
<th>Description</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>CPS, Goushala, Lilua, Howrah</td>
<td>2011 (July-11)</td>
<td>Indigenous, non descript and cross bred cattle =685</td>
<td>Cauliflower like growth on whole body(WB0909C 0689,n=78,1-5 cm), extensive warty growth on the ear pinna(WB0909C 0876), a big sized cauliflower like wart at the lumbar region(WB0909C0096 ,n=1.5 cm)</td>
</tr>
<tr>
<td>6</td>
<td>CPS, Goushala, Lilua, Howrah</td>
<td>2011 (Dec-11)</td>
<td>Indigenous, non descript and cross bred cattle =675</td>
<td>Nodular warty growth on lower eye lid, ear pinna and mandible(WB0909C0011,n=16,2-3 cm), small cauliflower like growth above the base of the tail and at perineum(WB0909C1232,n=2,2cm&amp;4cm)</td>
</tr>
<tr>
<td>6</td>
<td>CPS, Goushala, Lilua, Howrah</td>
<td>2012 (July-12)</td>
<td>Indigenous, non descript and cross bred cattle =597</td>
<td>Small slender growth on ventral abdomen and axilla(WB0909C00675,n=14,2-4cm), extensive growth on the ear pinna and upper eye lids(WB0909C0098,n=32,2-3cm), small cauliflower like growth on whole body(WB0909C00765,n=87,2-3cm)</td>
</tr>
<tr>
<td>6</td>
<td>CPS, Goushala, Lilua, Howrah</td>
<td>2012 (Dec-12)</td>
<td>Indigenous, non descript and cross bred cattle =603</td>
<td>Sessile type warts on posterior aspect of thigh and at tail base(WB0909A0075,n=23,2-3cm), extensive growth on head, face and ear pinna(WB0909C 00321,n=34,1-3 cm), club shaped wart like growth on both fore limbs(WB0909C 00432,n=32,1-4cm, club like warts on all four limbs(WB0909C0021,n=58,1-3 cm)</td>
</tr>
<tr>
<td>7</td>
<td>CPS, Goushala, Sodepur, Kolkata</td>
<td>2009 (July-09)</td>
<td>Total strength=837, (milch- 136, dry-300, bull-16, calf-115, heifer-270)</td>
<td>Squat type warts on nose and around eye(WB 0909A 0061,n=24, 1-3 cm), extensive irregular cauliflower like warts on face(WB 0909C-0058,n=100,1-5 cm), extensive warty growth on the ear pinna and at perineum(WB0909C0058,n=100,1-5 cm), neck and fore limbs, small sessile type wart on back and tail twitch(WB 0909A0052,n=13, 2-3 cm)</td>
</tr>
<tr>
<td>7</td>
<td>CPS, Goushala, Sodepur, Kolkata</td>
<td>2009 (Dec-09)</td>
<td>Total strength=850, (milch-136, dry-300, bull-16,male calf-75, female calf-123,heifer-170)</td>
<td>Cauliflower like growth on whole body(MC-WB 0909B/00952,n=13,2-3 cm), severe cauliflower like warts on both fore limbs(MC-WB 0909C 0058,n=100,1-5 cm), small cauliflower like growth on whole body(WB0909C0096,n=1.5 cm)</td>
</tr>
<tr>
<td>7</td>
<td>CPS, Goushala, Sodepur, Kolkata</td>
<td>2010 (July-10)</td>
<td>Total strength=757 (milch-106, dry-290, bull-16,male calf-65, female calf-93,heifer-187)</td>
<td>Cauliflower like growth on whole body(MC-WB 0909B0058,n=78,1-5 cm), extensive warty growth on the ear pinna(WB 0909B/0101,n=28,2-4 cm) face and neck, multiple coalescing exuberant growth with blackish coarse appearance on fore limbs, neck and belly(WB 0909 A/0347, n=68, 1-5 cm)</td>
</tr>
<tr>
<td>7</td>
<td>CPS, Goushala, Sodepur, Kolkata</td>
<td>2010 (Dec-10)</td>
<td>Total strength=787 (milch-116, dry-280, bull-26,male calf-76, female calf-99,heifer-190)</td>
<td>Elevated, dome shaped warts on ear pinna (WB 0909B0101,n=28,2-4 cm) face and neck, multiple coalescing exuberant growth with blackish coarse appearance on fore limbs, neck and belly(WB 0909 A/0347, n=68, 1-5 cm)</td>
</tr>
</tbody>
</table>

**Results**
<table>
<thead>
<tr>
<th>No.</th>
<th>Location</th>
<th>Year/Time</th>
<th>Total strength</th>
<th>Description of lesions</th>
<th>Treatment</th>
<th>Grade</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>7(5)</td>
<td>CPS, Goushala, Sodepur, Kolkata</td>
<td>2011 (Jul-11)</td>
<td>Total strength-787 (milch-116, dry-280, bull-26, male calf-76, female calf-99, heifer-190)</td>
<td>CIFIC-2 (10-14 Months)&amp; CBHF-1(4 Years), Total CWT-03(CPS 58-60) : KKT 35-KKT 37</td>
<td>Multiple small cauliflower like growths on neck and fore limbs(WB 0909C/0234, n=23, 1-4 cm), irregular dome shaped warts on axilla, ventral abdomen and perineum(WB 0909C/0249, n=21, 2.1-4 cm), squat type warts on face, ears, eyelid and back(WB 0909A/0267, n=26, 2.3 cm)</td>
<td>4-5 Months, moderate grades of infection, treated by autogenous hemotherapy and parental administration of antimonial and Ivermectin</td>
<td>0.39%</td>
</tr>
<tr>
<td>7(6)</td>
<td>CPS, Goushala, Sodepur, Kolkata</td>
<td>2011 (Dec-11)</td>
<td>Total strength-811 (milch-136, dry-180, bull-36, male calf-78, female calf-129, heifer-252)</td>
<td>CIFIC-1 (11 Months), CBHF-1 (3 Years) &amp; CBHF-2 (2-4 Years), Total CWT-04(CPS 61-64) : KKT 38-KKT 41</td>
<td>Small cauliflower like growth on thorax and back(WB 0909C/0214, n=21, 1.4 cm), small slender growth on the hip and hind legs(WB 0909C/0134, n=13, 1-3 cm), small irregular hard horny warts on head, ear flaps and hump region(WB 0909B/0211, n=13, 1-4 cm), extensive cauliflower like growth on posterior aspect of the thigh and tail base(WB 0909B/0191, n=33, 2.4 cm)</td>
<td>3-4 Months, moderate grade infection, treated by S/C administration of Ivermectin and autogenous hemotherapy</td>
<td>0.49%</td>
</tr>
<tr>
<td>7(7)</td>
<td>CPS, Goushala, Sodepur, Kolkata</td>
<td>2012 (July-12)</td>
<td>Total strength-801 (milch-136, dry-187, bull-34, female calf-70, female calf-173, heifer-201)</td>
<td>HLXHF-1 (3 Years), CIFIC-1 (12 Months), &amp; CBHF-1 (2-4 Years), Total CWT-03 (CPS 65-67) : KKT 42-KKT 44</td>
<td>Elevated, dome shaped warts on poll region, ears, face and neck(WB 0909B/0303, n=23, 2.3 cm), extensive cauliflower like growths on face and neck(WB 0909C/0391, n=34, 2.4 cm), multiple coalescing exuberant growth with blackish coarse appearance on eyes, head, neck and belly(WB 0909A/0091, n=37, 1.4 cm)</td>
<td>3-4 Months, moderate grade infection, treated by S/C administration of Ivermectin and autogenous hemotherapy</td>
<td>0.37%</td>
</tr>
<tr>
<td>7(8)</td>
<td>CPS, Goushala, Sodepur, Kolkata</td>
<td>2012 (Dec-12)</td>
<td>Total strength-865 (milch-156, dry-236, bull-34, male calf-77, female calf-179, heifer-183)</td>
<td>CIFIC-1 (12 Months), &amp; CBHF-1 (2-4 Years), Total CWT-02 (CPS 68-69) : KKT 45-KKT 46</td>
<td>Multiple small cauliflower like growths on fore limbs(WB 0909C/0101, n=14, 2-4 cm), squat type warts on eyelid and back(WB 0909C/0333, n=34, 1.4 cm),</td>
<td>4-6 Months, Mild to moderate grades of infection, Treated by autogenous hemotherapy and antimony compound</td>
<td>0.23%</td>
</tr>
<tr>
<td>8(1)</td>
<td>ERS, National Dairy Research Institute (NDRI), Kalyani, Nadia</td>
<td>July 2010</td>
<td>JY X TH, JY X RS, JY X RS X TH: Milch-47, Dry-15, HF-61, FC-09 &amp; MC-03: Total-135</td>
<td>JTH FC-1 (10 Months), JYRS HF-2 (2-3 Years), Total CWT-02(CPS 65-67): KKT 45-KKT 46</td>
<td>Multiple(n=12, 2-3 cm), dry, horny, cauliflower like pedunculated warts on eyelids and ears(ERSK-829), cauliflower like masses of varying sizes(n=20, 1-3 cm) above the skin surface restricted to head and shoulder region(ERSK-768), head and inter scapular region(ERSK-853), n=16, 1-5 cm</td>
<td>Treated by Inj. Ivermectin by S/C route</td>
<td>2.2%</td>
</tr>
<tr>
<td>8(2)</td>
<td>ERS, National Dairy Research Institute (NDRI), Kalyani, Nadia</td>
<td>Dec 2010</td>
<td>JY X TH, JY X RS, JY X RS X TH: Milch-49, Dry-16, HF-53, FC-12 &amp; MC-08: Total-138</td>
<td>CBHF-1 (1 Years) &amp; JTHF-1 (2 Years), Total CWT-02(NDA 305-NDA 306)</td>
<td>Multiple(n=15) large sized warts(4-7 cm) distributed on head, neck and thorax(ERSK-784), multiple(n=21), sessile, solid outgrowths(3-6 cm size) on face, upper eye lids and both sides of the neck(ERSK-930)</td>
<td>Treated by Inj. Ivermectin by S/C route</td>
<td>1.44%</td>
</tr>
<tr>
<td>8(3)</td>
<td>ERS, National Dairy Research Institute (NDRI), Kalyani, Nadia</td>
<td>July 2011</td>
<td>JY X TH, JY X RS, JY X RS X TH: Milch-48, Dry-17, HF-48, FC-25 &amp; MC-10: Total-163</td>
<td>CBJFC-1 (10 Months) &amp; JYKSHF-2 (2-3 Years), Total CWT-03(NDA 307- NDA 309)</td>
<td>Multiple, hard, horny ellipsoid and irregular shaped warts(n=24.2-4 cm) on fore limbs and both sides of the neck(ERSK-838), multiple , cauliflower like nodular cutaneous papilloma(n=16, 1.3 cm) at the neck region(ERSK-927), extensive growth(n=20, 1-5 cm) on the ear pinna and at the base of the ears(ERSK-938),</td>
<td>Treated by Inj. Ivermectin by S/C route</td>
<td>1.84%</td>
</tr>
<tr>
<td>8(4)</td>
<td>ERS, National Dairy Research Institute</td>
<td>Dec 2011</td>
<td>JY X TH, JY X RS, JY X RS X TH: Milch-50, Dry-21, HF-48, FC-25 &amp; MC-</td>
<td>JTMC-1 (8 Months) &amp; JTHF-2 (2-3 Years), Total CWT-03(NDA 310- NDA-</td>
<td>Wart like growths(n=15,2.4 cm) on ear flaps, fore limbs and both sides of the neck(ERSK-936), extensive irregular cauliflower like growth(n=30,1-5 cm) on ear pinnae, face, neck</td>
<td>Treated by Inj. Ivermectin by S/C route and Inj. Anthimoline</td>
<td>1.84%</td>
</tr>
</tbody>
</table>
(NDRI), Kalyani, Nadia

| 10: Total-163 | 312 | and dewlap (ERSK-942), scattered, blackish, dome shaped growths (n=14, 2-3 cm) on the ear pinna and upper eye lids (ERSK-782), |

| ERS, National Dairy Research Institute (NDRI), Kalyani, Nadia | July-2012 | JY X TH, JY X RS, JY X RS X TH: Milch-50, Dry-21, HF-33, FC-29 & MC-19: Total-152 | CBJHF-2 (11-14 Months) & JYRSFC-1 (11 Months): Total CWT-03 (NDA 313- NDA 315) | Multiple (n=26), small (1-2 cm), cauliflower like pedunculated warts on head, neck and thorax (ERSK-578), posterior aspect of the thigh, axilla and at the base of the tail (ERSK-804, n=12, 1-2 cm), cauliflower like warts (n=16,1-3 cm) on the face, ears and fore limbs (ERSK-952) | Treated by autohemotherapy |

| 27532 | 232 | 1.97% |

Summary: year wise incidence of bovine and bubaline papillomatosis in organized farms in Bengal


Bubaline papilloma (BUP)/buffalo warts (BWT, n = 24) with year wise recorded incidence: BWT in 2008, n=04, BWT in 2009, n=13, BWT in 2010, n=07
Table-70: Abattoir survey on gross clinicopathological observations on bovine and bubaline cutaneous papillomatosis in Kolkata & Darjeeling of West Bengal

<table>
<thead>
<tr>
<th>Sl No</th>
<th>Name or place of the abattoir/ slaughter house</th>
<th>Survey period</th>
<th>No. of animals screened</th>
<th>Cases of BOP and BUP</th>
<th>Gross clinical observations</th>
<th>Severity of infection</th>
<th>Incidence percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Large animal slaughter house, Tangra, Kolkata</td>
<td>Dec-2008</td>
<td>Cattle-55, Buffalo-20</td>
<td>BOP-2(CCWT-1 CTP-1 BUP-01(BCW-1)</td>
<td>Multiple, cauliflower like CCWT in an ND BK (5-6 years) (KKT-1) on Rt. Lower neck, n=6, 2-3 cm, CTP in a CBJ cow (KKT-2), multiple, frond type warts on udder and teats, n=8, 1-2 cm, BCWT in an adult Murrah buffalo (KKT-3), bearing a big sized (6 cm) whitish fibropapilloma like lesion little below the anus</td>
<td>CCWT-2, Mild grade BCWT-1, Mild grade</td>
<td>Cattle-1.81% Buffalo-5%</td>
</tr>
<tr>
<td>2</td>
<td>Large animal slaughter house, Tangra, Kolkata</td>
<td>June-2009</td>
<td>Cattle-60, Buffalo-15</td>
<td>BOP-3(CCWT-2 CTP-1 BUP-01(BTP-1)</td>
<td>Multiple, cauliflower like CCWT in an ND cow (KKT-4) on Rt. axilla, n=10, 2-3 cm, (KKT-5), bearing lesions, on n=12, 2-3 cm on face and fore limbs, CTP in a CBJ cow (KKT-6), multiple, frond type warts on udder and teats, n=8, 1-2 cm, BTP in an adult Murrah buffalo, 8 years (KKT-7), bearing a big multiple rice grain type warts on teats only (n=16, 1-2 cm)</td>
<td>CCWT-2, Moderate grade CTP-1, Mild grade BTP-1, Moderate grade</td>
<td>Cattle-5% Buffalo-6.6%</td>
</tr>
<tr>
<td>3</td>
<td>Large animal slaughter house, Tangra, Kolkata</td>
<td>Aug-2011</td>
<td>Cattle-69, Buffalo-18</td>
<td>BOP-4(CCWT-2 CTP-2 BUP-02(BTP-2)</td>
<td>CTP, in one CBJ cow (7 years), bearing multiple filiform warts on all four teats, (KKT-8) (CBJ-14908, n=12, 1-2 cm, one ND cow (KKT-9), bearing multiple frond like warts on teats only, n=15, 0.5-1 cm, CCWT in two ND cow (5-6 years) (KKT-10) club shaped warts on ventral abdomen (n=7, 2-3 cm), (KKT-11), flank and belly (n=12, 2-3 cm), BTP-2, (KKT-12) Murrah buffalo, 10 years, bearing frond type warts on fore teats (n=12, 1-2 cm), (KKT-13), ND she buffalo, 10 years, bearing rounded and flat type warts on all four teats (n=21, 1-3 cm)</td>
<td>CCWT-2, Moderate grade-1, mild grade-1 CTP-1, Moderate grade BTP-2, Moderate grade</td>
<td>Cattle-5.79% Buffalo-11.11%</td>
</tr>
<tr>
<td>4</td>
<td>Large animal slaughter house, Tangra, Kolkata</td>
<td>July-2011</td>
<td>Cattle-56, Buffalo-22</td>
<td>BOP-CCWT-2 CTP-1 BUP-02(BTP-2)</td>
<td>CTP, in one HLX cow (8 years), (KKT-14), bearing multiple frond type warts on all four teats (n=12, 0.5-1 cm), CCWT in two CBJ cow (4-5 years), (KKT-15) club shaped warts on axilla and abdomen (n=17, 2-3 cm), and another CBJ cow (KKT-16) bearing typical pedunculated warts on thorax and belly (n=12, 2-3 cm), BTP-2, (KKT-17), Murrab buffalo bearing frond type warts on fore teats (n=12, 1-2 cm), (KKT-18), ND buffalo bearing rounded and elevated teat lesions/warts on all four teats (n=11, 1-2 cm)</td>
<td>CCWT-2, Moderate grade-1, CTP-1, Moderate grade, BTP-2, Moderate grade</td>
<td>Cattle-5.35% Buffalo-9.09%</td>
</tr>
<tr>
<td>5</td>
<td>Large animal slaughter house, Tangra, Kolkata</td>
<td>March-2012</td>
<td>Cattle-46, Buffalo-25</td>
<td>BOP-CCWT-3 CTP-nil BUP-02(BTP-2)</td>
<td>Multiple, cauliflower like CCWT in a CBJ Bull (KKT-19) on medial aspect of right thigh (n=6, 2-3 cm), HLX cow (KKT-20), bearing numerous cauliflower like warts (n=56, 1-2 cm) on fore limbs and belly, HLX cow (KKT-21), bearing nodular lesions on head, neck and thorax (n=12, 2-3 cm), BTP in an adult Murrah buffalo (KKT-22), bearing multiple rice grain type warts on teats only (n=16, 1-2 cm) and in a ND she buffalo (KKT-23)</td>
<td>CCWT-2, Moderate grade-1, mild grade-1 BTP-2, Moderate grade</td>
<td>Cattle-6.52% Buffalo-8%</td>
</tr>
<tr>
<td>6</td>
<td>Large animal slaughter house, DGHC, Darjeeling</td>
<td>May-2012</td>
<td>65</td>
<td>BOP-NIL BUP-NIL</td>
<td>No wart like lesions found on skin surface either in cattle or in buffalo</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table-71: Field survey and clinicopathological observation on bovine teat papillomatosis in West Bengal

<table>
<thead>
<tr>
<th>Sl No</th>
<th>Name of the dairy farm</th>
<th>Period of survey</th>
<th>Sample ID No</th>
<th>Animals detail</th>
<th>Location of wart</th>
<th>Type of wart</th>
<th>No &amp; size</th>
<th>Severity of affection</th>
<th>Duration of infection</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>R. K. Mission, Narendrapur, 24 PGN(S)</td>
<td>Nov’09</td>
<td>STP-106</td>
<td>JYXSH-244, 4 Years</td>
<td>Teat crest</td>
<td>Rice grain</td>
<td>6 : 1-1.5 cm</td>
<td>Mild</td>
<td>3 Months</td>
<td>Treated by Thuja</td>
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<tr>
<td>2</td>
<td>R. K. Mission, Narendrapur, 24 PGN(S)</td>
<td>Nov’09</td>
<td>STP-107</td>
<td>JYXGIR-067, 5 Years</td>
<td>Teats</td>
<td>Rice grain</td>
<td>8 :0.5-1 cm</td>
<td>Mild</td>
<td>5 Months</td>
<td>Treated by Thuja</td>
</tr>
<tr>
<td>3</td>
<td>R. K. Mission, Narendrapur, 24 PGN(S)</td>
<td>Nov’09</td>
<td>STP-108</td>
<td>HFXGIR-239, 4 Years</td>
<td>Teats and udder</td>
<td>Rice grain</td>
<td>15 :0.5-1.5cm</td>
<td>Moderate</td>
<td>3 Months</td>
<td>Treated by Thuja</td>
</tr>
<tr>
<td>4</td>
<td>NDRI, ERS, Kalyani, Nadia</td>
<td>Nov’09</td>
<td>NDA-113</td>
<td>JYXTH-576, 3 Years</td>
<td>Caudal teats</td>
<td>Frond</td>
<td>12 : 1-1.5cm</td>
<td>Moderate</td>
<td>4 Months</td>
<td>Treated by Inj. Ivermectin</td>
</tr>
<tr>
<td>5</td>
<td>NDRI, ERS, Kalyani, Nadia</td>
<td>Nov’09</td>
<td>NDA-114</td>
<td>JYXRS-951, 4 Years</td>
<td>All four teats</td>
<td>Rice grain</td>
<td>15 :1-1.5cm</td>
<td>Moderate</td>
<td>5 Months</td>
<td>Treated by Inj. Ivermectin</td>
</tr>
<tr>
<td>6</td>
<td>NDRI, ERS, Kalyani, Nadia</td>
<td>Nov’09</td>
<td>NDA-115</td>
<td>JYXRS-481,6 Years</td>
<td>Teats and udder</td>
<td>Frond</td>
<td>12 : 1-1.5cm</td>
<td>Moderate</td>
<td>3 Months</td>
<td>Treated by Inj. Ivermectin</td>
</tr>
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<td>7</td>
<td>NDRI, ERS, Kalyani, Nadia</td>
<td>Nov’09</td>
<td>NDA-116</td>
<td>Tripble breed cross-(JTS)-765, 5 Years</td>
<td>Teat crest</td>
<td>Frond</td>
<td>8 :0.5-1 cm</td>
<td>Mild</td>
<td>3 Months</td>
<td>Treated by Inj. Ivermectin</td>
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<td>8</td>
<td>NDRI, ERS, Kalyani, Nadia</td>
<td>Nov’09</td>
<td>NDA-117</td>
<td>JT(JYXTH)-578, 7 Years</td>
<td>Teats and udder</td>
<td>Frond</td>
<td>6 : 1-1.5 cm</td>
<td>Mild</td>
<td>3 Months</td>
<td>Treated by Inj. Ivermectin</td>
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<td>9</td>
<td>CPS, Anandanagar, Kalyani, Nadia</td>
<td>Nov’09</td>
<td>NDA-118</td>
<td>JS (JY X Sindhri)-484, 6 Years</td>
<td>Front teats</td>
<td>Rice grain</td>
<td>8 :0.5-1 cm</td>
<td>Mild</td>
<td>4 Months</td>
<td>Treated by Inj. Ivermectin</td>
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<td>10</td>
<td>CPS, Anandanagar, Kalyani, Nadia</td>
<td>Nov’09</td>
<td>NDA-119</td>
<td>CBJ Cow-00023, 7 Years</td>
<td>Caudal teats</td>
<td>Frond</td>
<td>15 :1-1.5cm</td>
<td>Moderate</td>
<td>4 Months</td>
<td>Auto haemotherapy</td>
</tr>
<tr>
<td>11</td>
<td>CPS, Anandanagar, Kalyani, Nadia</td>
<td>Nov’09</td>
<td>NDA-120</td>
<td>ND Cow-00126, 5 Years</td>
<td>Teats and udder</td>
<td>Rice grain</td>
<td>25 :1-1.5cm</td>
<td>Moderate</td>
<td>4 Months</td>
<td>Auto haemotherapy</td>
</tr>
<tr>
<td>12</td>
<td>CPS, Anandanagar, Kalyani, Nadia</td>
<td>Nov’09</td>
<td>NDA-121</td>
<td>CBJ Cow-00039, 5 Years</td>
<td>Teats and udder</td>
<td>Rice grain</td>
<td>19 :1-2.5cm</td>
<td>Moderate</td>
<td>4 Months</td>
<td>Auto haemotherapy</td>
</tr>
<tr>
<td>13</td>
<td>CPS, Anandanagar, Kalyani, Nadia</td>
<td>Nov’09</td>
<td>NDA-122</td>
<td>Indigenous Cow-00067, 6 Years</td>
<td>Teat crest</td>
<td>Frond</td>
<td>6 : 1-1.5 cm</td>
<td>Mild</td>
<td>3 Months</td>
<td>Auto haemotherapy</td>
</tr>
<tr>
<td>14</td>
<td>CPS, Sodepur, N 24 PGN</td>
<td>Nov’09</td>
<td>NTP-61</td>
<td>ND Cow-00016, 7 Years</td>
<td>All four teats</td>
<td>Rice grain</td>
<td>15 :1-3.5cm</td>
<td>Moderate</td>
<td>4 Months</td>
<td>Treated by Inj. Ivermectin</td>
</tr>
<tr>
<td>15</td>
<td>CPS, Sodepur, N 24 PGN</td>
<td>Dec’09</td>
<td>NTP-62</td>
<td>ND Cow-00337, 5Years</td>
<td>All four teats</td>
<td>Rice grain</td>
<td>15 :1-2 cm</td>
<td>Moderate</td>
<td>4 Months</td>
<td>Treated by Inj. Ivermectin</td>
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<tr>
<td>16</td>
<td>CPS, Sodepur, N 24 PGN</td>
<td>Dec’09</td>
<td>NTP-63</td>
<td>ND Cow-1528, 6 Years</td>
<td>Caudal teats</td>
<td>Frond</td>
<td>5 : 1-3 cm</td>
<td>Mild</td>
<td>3 Months</td>
<td>Treated by Inj. Ivermectin</td>
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<tr>
<td>17</td>
<td>CPS, Sodepur, N 24 PGN</td>
<td>Dec’09</td>
<td>NTP-64</td>
<td>ND Cow-00111, 8Years</td>
<td>Caudal teats</td>
<td>Frond</td>
<td>6 : 1-1.5 cm</td>
<td>Mild</td>
<td>3 Months</td>
<td>Treated by Inj. Ivermectin</td>
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<tr>
<td>18</td>
<td>CPS, Sodepur, N 24 PGN</td>
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<td>NTP-65</td>
<td>ND Cow-00226, 5 Years</td>
<td>Caudal teats</td>
<td>Frond</td>
<td>3 : 1-1.5 cm</td>
<td>Mild</td>
<td>3 Months</td>
<td>Treated by Inj. Ivermectin</td>
</tr>
<tr>
<td>19</td>
<td>CPS, Sodepur, N 24 PGN</td>
<td>Dec’09</td>
<td>NTP-66</td>
<td>CBJ Cow-000603</td>
<td>Caudal teats</td>
<td>Frond</td>
<td>6 : 1.5 -3 cm</td>
<td>Mild</td>
<td>3 Months</td>
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<tr>
<td>20</td>
<td>CPS, Lilua, Howrah</td>
<td>Dec’09</td>
<td>HWH-22</td>
<td>CBJ Cow-00576, 6 Years</td>
<td>All four teats</td>
<td>Rice grain</td>
<td>12 : 1-1.5cm</td>
<td>Moderate</td>
<td>3 Months</td>
<td>Thuja orally</td>
</tr>
<tr>
<td>21</td>
<td>CPS, Lilua, Howrah</td>
<td>Dec’09</td>
<td>HWH-23</td>
<td>CBJ 01393, 8 Years</td>
<td>All four teats</td>
<td>Rice grain</td>
<td>12 : 1-1.5cm</td>
<td>Moderate</td>
<td>4 Months</td>
<td>Thuja orally</td>
</tr>
<tr>
<td>No.</td>
<td>Location</td>
<td>Date</td>
<td>Diary No.</td>
<td>Breed</td>
<td>Age</td>
<td>Teats Affected</td>
<td>Lesion Type</td>
<td>Lesion Size</td>
<td>Treatment</td>
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<td>22</td>
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<td>HWH-24</td>
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<td>All four teats</td>
<td>Rice grain</td>
<td>19 : 2-2.5cm</td>
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<td>Thuja orally</td>
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<tr>
<td>23</td>
<td>CPS, Lilua, Howrah</td>
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<td>HWH-25</td>
<td>ND Cow-01399, 5 Years</td>
<td>Left front teat</td>
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<td>12 : 1-1.5cm</td>
<td>Moderate</td>
<td>Thuja orally</td>
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<tr>
<td>24</td>
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<td>Dec'09</td>
<td>HWH-26</td>
<td>ND Cow-01373, 4 Years</td>
<td>All four teats</td>
<td>Rice grain</td>
<td>17 : 1-1.5cm</td>
<td>Moderate</td>
<td>Thuja orally</td>
<td></td>
</tr>
<tr>
<td>25</td>
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<td>Dec'09</td>
<td>HWH-27</td>
<td>ND Cow-01287, 6 Years</td>
<td>All four teats</td>
<td>Rice grain</td>
<td>12 : 1-1.5cm</td>
<td>Moderate</td>
<td>Thuja orally</td>
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<td>26</td>
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<td>Dec'09</td>
<td>NDA-123</td>
<td>CBC 2XBJ-649, 6 years</td>
<td>Teats and udder</td>
<td>Frond type</td>
<td>20: 2-2.5cm</td>
<td>Moderate</td>
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<td>27</td>
<td>State Livestock Farm (SLF) Kalyani, Nadia</td>
<td>Dec'09</td>
<td>NDA-124</td>
<td>CBC X594, 5 Years</td>
<td>Teats and udder</td>
<td>Rice grain</td>
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<td>Treated by Inj. Ivermectin</td>
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<td>28</td>
<td>State Livestock Farm (SLF) Kalyani, Nadia</td>
<td>Dec'09</td>
<td>NDA-125</td>
<td>CBC 2XFH 151, 6 Years</td>
<td>Teats and udder</td>
<td>Rice grain</td>
<td>20: 2-2.5cm</td>
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<td>Treated by Inj. Ivermectin</td>
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<td>State Livestock Farm (SLF) Kalyani, Nadia</td>
<td>Dec'09</td>
<td>NDA-126</td>
<td>CBC 1XBJ-26, 6 Years</td>
<td>All four Teats</td>
<td>Diffuse Frond type</td>
<td>5 : 1-1.5cm</td>
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<tr>
<td>30</td>
<td>Nigamananda Ashram Dairy, Jharboni, Paschim Medinipur</td>
<td>Jan’10</td>
<td>WMP-47</td>
<td>CBJ Cow-03, 6 Years</td>
<td>All four teats</td>
<td>Rice grain</td>
<td>18 : 1-1.5cm</td>
<td>Moderate</td>
<td>Autohemotherapy</td>
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<td>31</td>
<td>Haringhata Govt. Dairy Farm, Nadia</td>
<td>Jan’10</td>
<td>NDA-127</td>
<td>CBJ XJ-603, 5 Years</td>
<td>All four teats</td>
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<td>20 : 2-2.5cm</td>
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<td>32</td>
<td>Haringhata Govt. Dairy Farm, Nadia</td>
<td>Jan’10</td>
<td>NDA-128</td>
<td>S-1650, 7 Years</td>
<td>Front teats</td>
<td>Rice grain</td>
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<td>Treated by Inj. Ivermectin</td>
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<td>33</td>
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<td>NDA-129</td>
<td>S-1192, 5 Years</td>
<td>All four teats</td>
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<td>34</td>
<td>Haringhata Govt. Dairy Farm, Nadia</td>
<td>Jan’10</td>
<td>NDA-130</td>
<td>G-930, 4 Years</td>
<td>All four teats</td>
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<td>5 : 1-1.5cm</td>
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<tr>
<td>35</td>
<td>Haringhata Govt. Dairy Farm, Nadia</td>
<td>Jan’10</td>
<td>NDA-131</td>
<td>CBJ-731, 6 Years</td>
<td>Front teats</td>
<td>Diffuse Frond type</td>
<td>15 : 1-1.5cm</td>
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<tr>
<td>36</td>
<td>PBGSBS, Haringhata, Nadia</td>
<td>June’10</td>
<td>NDA-132</td>
<td>S-1640, 5 Years</td>
<td>All four teats</td>
<td>Rice grain</td>
<td>15 : 1-1.5cm</td>
<td>Moderate</td>
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<td>37</td>
<td>PBGSBS, Haringhata, Nadia</td>
<td>June’10</td>
<td>NDA-133</td>
<td>S-222, 6 Years</td>
<td>Front teats</td>
<td>Diffuse Frond type</td>
<td>20 : 2-2.5cm</td>
<td>Moderate</td>
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<tr>
<td>38</td>
<td>PBGSBS, Haringhata, Nadia</td>
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<td>NDA-134</td>
<td>S-1650, 7 Years</td>
<td>All four teats</td>
<td>Rice grain</td>
<td>15 : 1-1.5cm</td>
<td>Moderate</td>
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<tr>
<td>39</td>
<td>PBGSBS, Haringhata, Nadia</td>
<td>June’10</td>
<td>NDA-135</td>
<td>G-57, 7 years</td>
<td>Caudal teat crest</td>
<td>Diffuse Frond type</td>
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<td>Dec’10</td>
<td>NDA-136</td>
<td>G-95, 4 years</td>
<td>All four teats</td>
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<td>Moderate</td>
<td>Treated by Inj. Antheomaline</td>
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<td>PBGSBS, Haringhata, Nadia</td>
<td>Dec’10</td>
<td>NDA-137</td>
<td>G-71.5 Years</td>
<td>Caudal teat crest</td>
<td>Diffuse Frond type</td>
<td>15 : 1-1.5cm</td>
<td>Moderate</td>
<td>Treated by Inj. Antheomaline</td>
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<tr>
<td>Case No</td>
<td>Origin of Case</td>
<td>Date</td>
<td>Case No.</td>
<td>Age</td>
<td>Type of Lesion</td>
<td>Lesion Area</td>
<td>Severity</td>
<td>Duration</td>
<td>Treatment</td>
<td>Comments</td>
</tr>
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<td>PBGSBS , Haringhata, Nadia</td>
<td>Dec’10</td>
<td>NDA-138</td>
<td>S-748, 6 Years</td>
<td>All four teats</td>
<td>Rice grain</td>
<td>6: 1-1.5 cm</td>
<td>Mild</td>
<td>3 Months</td>
<td>Treated by Ivermectin</td>
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<td>43</td>
<td>PBGSBS , Haringhata, Nadia</td>
<td>Dec’10</td>
<td>NDA-139</td>
<td>S-205, 7 Years</td>
<td>All four teats</td>
<td>Rice grain</td>
<td>20: 2-2.5 cm</td>
<td>Moderate</td>
<td>3 Months</td>
<td>Treated by Ivermectin</td>
</tr>
<tr>
<td>44</td>
<td>State Livestock Farm(SLF) Kalyani, Nadia</td>
<td>Dec’10</td>
<td>NDA-140</td>
<td>CBC 2XFH-151, 6 Years</td>
<td>Caudal two teats</td>
<td>Filiform warts</td>
<td>11:1-2 CM</td>
<td>Moderate</td>
<td>4 Months</td>
<td>Treated by Autohemotherapy coupled with levamisole oral therapy</td>
</tr>
<tr>
<td>45</td>
<td>State Livestock Farm(SLF) Kalyani, Nadia</td>
<td>Dec’10</td>
<td>NDA-141</td>
<td>Haryana cow, HY-1163, 5 Years</td>
<td>All four teats</td>
<td>Diffuse Frond type</td>
<td>6:1-1.5CM</td>
<td>Mild</td>
<td>4 Months</td>
<td>Treated by Autohemotherapy coupled with levamisole oral therapy</td>
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<tr>
<td>46</td>
<td>Nigamananda Ashram Dairy, Halisahar, N- 24 PGN</td>
<td>April’11</td>
<td>NTP-67</td>
<td>XHF-16, 4 Years</td>
<td>All four teats</td>
<td>Rice grain</td>
<td>15:1-1.5 cm</td>
<td>Moderate</td>
<td>3 Months</td>
<td>Treated by Ivermectin</td>
</tr>
<tr>
<td>47</td>
<td>Nigamananda Ashram Dairy, Halisahar, N- 24 PGN</td>
<td>April’11</td>
<td>NTP-68</td>
<td>CBJ-3, 5 Years</td>
<td>All four teats</td>
<td>Diffuse Frond type</td>
<td>6:1-1.5 cm</td>
<td>Mild</td>
<td>3 Months</td>
<td>Treated by Ivermectin</td>
</tr>
<tr>
<td>48</td>
<td>Nigamananda Ashram Dairy, Halisahar, N- 24 PGN</td>
<td>April’11</td>
<td>NTP-69</td>
<td>JYXRS-17, 4 Years</td>
<td>Caudal teat crest</td>
<td>Diffuse Frond type</td>
<td>20:2-2.5 cm</td>
<td>Moderate</td>
<td>3 Months</td>
<td>Treated by Ivermectin</td>
</tr>
<tr>
<td>49</td>
<td>Nigamananda Ashram Dairy, Jharboni, Raolia, WestMidnapur</td>
<td>May’11</td>
<td>NTP-70</td>
<td>CBJ-07, 6 Years</td>
<td>Caudal teats only</td>
<td>Diffuse Frond type</td>
<td>10:2-2.5 cm</td>
<td>Moderate</td>
<td>3 Months</td>
<td>Treated by Ivermectin</td>
</tr>
<tr>
<td>50</td>
<td>State Livestock Farm Kalyani, Nadia</td>
<td>May’11</td>
<td>NDA-142</td>
<td>1XHJ-27, 5 Years</td>
<td>Front two teats</td>
<td>Rice grain</td>
<td>12:1-1.5 cm</td>
<td>Mild</td>
<td>4 Months</td>
<td>Treated by Autohemotherapy coupled with levamisole oral therapy</td>
</tr>
<tr>
<td>51</td>
<td>State Livestock Farm Kalyani, Nadia</td>
<td>May’11</td>
<td>NDA-143</td>
<td>X597, 6 Years</td>
<td>All four teats</td>
<td>Filiform warts</td>
<td>6:1-1.5 cm</td>
<td>Moderate</td>
<td>4 Months</td>
<td>Levamisole oral therapy</td>
</tr>
<tr>
<td>52</td>
<td>State Livestock Farm Kalyani, Nadia</td>
<td>May’11</td>
<td>NDA-144</td>
<td>2XFJ-107, 5 Years</td>
<td>Caudal two teats</td>
<td>Diffuse Frond type</td>
<td>20:2-2.5 cm</td>
<td>Moderate</td>
<td>4 Months</td>
<td>Treated by Ivermectin</td>
</tr>
<tr>
<td>53</td>
<td>State Livestock Farm Kalyani, Nadia</td>
<td>July’11</td>
<td>NDA-145</td>
<td>2XFJ-349, 6 Years</td>
<td>All four teats</td>
<td>Rice grain</td>
<td>10:2-2.5 cm</td>
<td>Mild</td>
<td>4 Months</td>
<td>Treated by Ivermectin</td>
</tr>
<tr>
<td>54</td>
<td>State Livestock Farm Kalyani, Nadia</td>
<td>July’11</td>
<td>NDA-146</td>
<td>2XBH-779, 4 Years</td>
<td>All four teats</td>
<td>Diffuse Frond type</td>
<td>12:1-1.5 cm</td>
<td>Moderate</td>
<td>4 Months</td>
<td>Levamisole oral therapy</td>
</tr>
<tr>
<td>55</td>
<td>State Livestock Farm Kalyani, Nadia</td>
<td>July’11</td>
<td>NDA-147</td>
<td>NDC-1128, 7 Years</td>
<td>All four teats</td>
<td>Diffuse Frond type</td>
<td>6:1-1.5 cm</td>
<td>Moderate</td>
<td>4 Months</td>
<td>Levamisole oral therapy</td>
</tr>
</tbody>
</table>

Case summary of CTP observed in organized Farms: CTP recorded in Nadia District-35(NDA 113-NDA 147), North 24 Pargana District-10(NTP 61-NTP 70), South 24 Pargana District-03(STP 106-STP 108), Howrah District (HWH 22-26), West Midnapur-01(WMP-47): Total CTP recorded in organized farms- n=55
### Table-72: Field clinicopathological survey on bubaline teat papillomatosis in West Bengal during September-2009 to December-2010

<table>
<thead>
<tr>
<th>Sl No</th>
<th>Place &amp; name of the dairy farm</th>
<th>No of animals screened</th>
<th>No of BTP cases with sample id</th>
<th>Animal details</th>
<th>Location</th>
<th>Type</th>
<th>No &amp; size</th>
<th>Severity of infection</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Kuliapat, Thakurbari, Nadia, Bhgat Dairy (Sep-2009)</td>
<td>12</td>
<td>1 (NDA 148)</td>
<td>Adult Murrah she buffalo-1 (8 Years)</td>
<td>Teat crest of all four teats</td>
<td>Frond type</td>
<td>n =12, 0.5 -1 cm</td>
<td>Moderate</td>
<td>Homeopathic remedy by S/C administration of Thuja 200X</td>
</tr>
<tr>
<td>2</td>
<td>Bhabani Pur Rail Gate, Kalyani, Nadia, Kishore Dairy (Sep-2009)</td>
<td>14</td>
<td>1 (NDA 149)</td>
<td>Adult Murrah she buffalo-1 (6 Years)</td>
<td>All four teats around the teat orifice</td>
<td>Rice grain type</td>
<td>n =16, 1.5-2 cm</td>
<td>Moderate</td>
<td>Thuja 200X by S/C route</td>
</tr>
<tr>
<td>3</td>
<td>Kanchrapara City Bazar, N-24 Pargana, Sing Dairy (Sep-2009)</td>
<td>10</td>
<td>1 (NTP 71)</td>
<td>Adult Murrah she buffalo-1 (5 Years)</td>
<td>Teat crest of all four teats</td>
<td>Rice grain type</td>
<td>n =9, 0.5-2 cm</td>
<td>Mild</td>
<td>Homeopathic remedy by S/C administration of Thuja 200X</td>
</tr>
<tr>
<td>4</td>
<td>Mail Pukur, Halisahar, N-24 PGN, Shankar Dairy (Sep-2009)</td>
<td>10</td>
<td>2 (NTP 72)</td>
<td>ND Water buffalo-1, 3rd lactation (8 Years)</td>
<td>Teats and udder</td>
<td>Rice grain type</td>
<td>n =12, 1-2.5 cm</td>
<td>Moderate</td>
<td>Inj Anthiomaline tried</td>
</tr>
<tr>
<td>5</td>
<td>City Bazar, Kanchrapara, N-24 PGN, Sriram Sing’s Dairy (Sep-2009)</td>
<td>9</td>
<td>1 (NTP 72)</td>
<td>Adult Murrah she buffalo-1, (6 Years)</td>
<td>All four teats around the teat orifice</td>
<td>Rice grain type</td>
<td>n =8, 1-2 cm</td>
<td>Mild</td>
<td>Inj Anthiomaline tried</td>
</tr>
<tr>
<td>6</td>
<td>Kampa, Kanchrapara, N-24 PGN, Mantu Ghosh Dairy (Dec-2009)</td>
<td>15</td>
<td>1 (NTP 73)</td>
<td>Murrah lactating buffalo-1, 3rd lactation (8 Years)</td>
<td>Teat crest of all four teats</td>
<td>Frond type</td>
<td>n =9, 0.8-2 cm</td>
<td>Mild</td>
<td>Homeopathic remedy by Thuja 200X by S/C route</td>
</tr>
<tr>
<td>7</td>
<td>Gayespur, Nadia, Pal Dairy (Dec-2009)</td>
<td>12</td>
<td>1 (NDA 138)</td>
<td>Adult Murrah she buffalo-1 (6 Years)</td>
<td>Base of all four teats</td>
<td>Round, elevated</td>
<td>n =8, 0.5 -2 cm</td>
<td>Mild</td>
<td>Inj Anthiomaline tried</td>
</tr>
<tr>
<td>8</td>
<td>R. P. School area, Kanchrapara, N-24 PGN, Krishna Dairy (Dec-2009)</td>
<td>16</td>
<td>1 (NTP 74)</td>
<td>ND lactating Water buffalo-1, 2nd lactation (7 Years)</td>
<td>Fore teats</td>
<td>Flower shaped</td>
<td>n =15, 1.5-2 cm</td>
<td>Moderate</td>
<td>Inj Anthiomaline tried</td>
</tr>
<tr>
<td>9</td>
<td>Saheb Bagan, Jhulania, Hooghly, Sing Dairy (Dec-2009)</td>
<td>12</td>
<td>1 (HLY 89)</td>
<td>Murrah she buffalo-1, (5 Years)</td>
<td>Teat crest of all four teats</td>
<td>Frond type</td>
<td>n =12, 1-2 cm</td>
<td>Inj Anthiomaline tried</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Choura Line, Jhulania, Hooghly, Sow Dairy (Dec-2009)</td>
<td>11</td>
<td>1 (HLY 90)</td>
<td>ND lactating Water buffalo-1, 3rd lactation (7 Years)</td>
<td>All four teats around the teat orifice</td>
<td>Frond type</td>
<td>n =8, 0.5-2 cm</td>
<td>Mild</td>
<td>Homeopathic remedy by Thuja 200X by S/C route</td>
</tr>
<tr>
<td>11</td>
<td>RP School Khantal area, Kanchrapara, N-24 PGN, Biswanath Dairy (Dec-2009)</td>
<td>40</td>
<td>1 (NTP 75)</td>
<td>Murrah she buffalo-1, 5 Years</td>
<td>Fore teats</td>
<td>Diffuse ,frond type</td>
<td>n =12, 1.5 -2.5 cm</td>
<td>Moderate</td>
<td>Homeopathic remedy by Thuja 200X by S/C route</td>
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<tr>
<td>12</td>
<td>Majherchar, Near Iswar Gupta Setu, Kalyani, Nadia, Jadab Dairy (Jan-2010)</td>
<td>21</td>
<td>1 (NDA 139)</td>
<td>Murrah she buffalo-1, (6 Years)</td>
<td>Teat crest of all four teats</td>
<td>Rice grain type</td>
<td>n =12, 0.5-1.5 cm</td>
<td>Mild</td>
<td>Autogenous vaccine prepared in 70% alcohol</td>
</tr>
<tr>
<td>13</td>
<td>Hajinagar, N-24 PGN, Jadav Dairy (Jan-2010)</td>
<td>14</td>
<td>1 (NTP 76)</td>
<td>Adult Murrah she buffalo-1, (7 Years)</td>
<td>Teats and udder</td>
<td>Frond type</td>
<td>n =12, 0.5-1.5 cm</td>
<td>Moderate</td>
<td>Inj Anthiomaline tried</td>
</tr>
<tr>
<td>No.</td>
<td>Location</td>
<td>Date</td>
<td>Age</td>
<td>Condition</td>
<td>Treatment</td>
<td>Result</td>
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<td>14</td>
<td>Hajinagar, N-24 PGN, Pathak Dairy(Jan-2010)</td>
<td>15(NTP 77)</td>
<td>Adult Murrah she buffalo-1.5 Years</td>
<td>All four teats around the teat orifice</td>
<td>Diffuse frond n =09, 0.5-1 cm</td>
<td>Mild Autogenous vaccine prepared in 70% alcohol</td>
<td></td>
<td></td>
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<td>15</td>
<td>Abdul Jafer Road, Kanchrapara, N-24 PGN, Yadav Dairy(Jan-2010)</td>
<td>8(NTP 78)</td>
<td>ND lactating Water buffalo-1, 3rd lactation</td>
<td>Teat crest of all four teats</td>
<td>Fronrod type n =12, 0.5 cm</td>
<td>Moderate Inj Anthiomaline tried</td>
<td></td>
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<tr>
<td>16</td>
<td>Baro Drain, Dangapara, Kanchrapara, N-24 PGN, Manoj Dairy(Jan-2010)</td>
<td>13(NTP 79)</td>
<td>Adult Murrah she buffalo-1.5 Years</td>
<td>Around tip of the teats (rear quarter)</td>
<td>Diffuse rice grain type n =12, 0.5 cm</td>
<td>Moderate Homeopathic remedy by Thuja 200X by S/C route</td>
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<td>17</td>
<td>Nagdah, Ghoshpara, N-24 PGN, Manoj Dairy(Jan-2010)</td>
<td>7(NTP 80)</td>
<td>Adult Murrah she buffalo-1.5 Years</td>
<td>Around tip of the teats (Front quarter)</td>
<td>Fronrod type n =10, 0.5-2 cm</td>
<td>Moderate Autogenous vaccine prepared in 70% alcohol</td>
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<tr>
<td>18</td>
<td>Charapole, N-24 PGN, Gour Dairy,(June-2010)</td>
<td>8(NTP 81)</td>
<td>Adult Murrah she buffalo-1.5 Years</td>
<td>Teat crest of all four teats</td>
<td>Fronrod n =12, 0.5-2 cm</td>
<td>Moderate Homeopathic remedy by Thuja 200X by S/C route</td>
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<tr>
<td>19</td>
<td>Santosh Ghosh, Ghosh para, N-24 PGN,(June-2010)</td>
<td>4(NTP 82)</td>
<td>ND lactating Water buffalo-1, 3rd lactation</td>
<td>Teat crest of all four teats</td>
<td>Fronrod n =12, 1.5 -2cm</td>
<td>Mild Autogenous vaccine prepared in 70% alcohol</td>
<td></td>
<td></td>
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<td>20</td>
<td>Sankar Ghosh, Nagdah, Charapole, N-24 PGN, Bala Dairy(June-2010)</td>
<td>3(NTP 83)</td>
<td>Adult Murrah she buffalo-1.5 Years</td>
<td>Around tip of the teats (rear quarter)</td>
<td>Fronrod n =12, 0.5 cm</td>
<td>Moderate Inj Anthiomaline tried</td>
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<tr>
<td>21</td>
<td>Sandip Ghosh, Birohi, Nadia Sandip Dairy(June-2010)</td>
<td>13(NDA 140)</td>
<td>Adult Murrah she buffalo-1.5 Years</td>
<td>Around tip of the teats (rear quarter)</td>
<td>Rice grain n =10, 0.5-2 cm</td>
<td>Mild Autogenous vaccine prepared in 70% alcohol</td>
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<tr>
<td>22</td>
<td>Laupala, Mohonpur, Nadia, Roy Dairy(June-2010)</td>
<td>5(NDA 141)</td>
<td>Adult Murrah she buffalo-1.5 Years</td>
<td>All four teats around the teat orifice</td>
<td>Fronrod n =12, 0.5-2 cm</td>
<td>Moderate Homeopathic remedy by Thuja 200X by S/C route</td>
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<tr>
<td>23</td>
<td>1 No Gate, Mohonpur, Nadia, Das Dairy(June-2010)</td>
<td>27(NDA 142)</td>
<td>Adult Murrah she buffalo-1.5 Years</td>
<td>Teats and udder</td>
<td>Rice grain n =12, 0.5 -1 cm</td>
<td>Moderate Inj Anthiomaline tried</td>
<td></td>
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<td>24</td>
<td>Down Colony, Harighata Farm, Nadia, Sabir Dairy,(Sep-2010)</td>
<td>5(NDA 143)</td>
<td>Adult Murrah she buffalo-1.5 Years</td>
<td>Teat crest of all four teats</td>
<td>Rice grain n =12, 0.5 -2 cm</td>
<td>Moderate Inj Anthiomaline tried</td>
<td></td>
<td></td>
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<tr>
<td>25</td>
<td>Birohi, Nadia, Adhikary Dairy,(Sep-2010)</td>
<td>6(NDA 144)</td>
<td>Adult Murrah she buffalo-1.5 Years</td>
<td>Teats and udder</td>
<td>Fronrod n =12, 0.5-2.5 cm</td>
<td>Moderate Homeopathic remedy tried</td>
<td></td>
<td></td>
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<tr>
<td>26</td>
<td>7 No Balindi, Nadia, Mukherjee Dairy,(Sep-2010)</td>
<td>11(NDA 145)</td>
<td>Adult Murrah she buffalo-1.5 Years</td>
<td>Teats and udder</td>
<td>Rice grain n =11,0.5-1cm</td>
<td>Moderate Homeopathic remedy tried</td>
<td></td>
<td></td>
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<tr>
<td>27</td>
<td>7- No Balindi, Nadia, Ghosh Dairy, (Sep-2010)</td>
<td>14(NDA 146)</td>
<td>Sub-adult Murrah she buffalo-1, (2 Years)</td>
<td>All four teats around the teat orifice</td>
<td>Fronrod n =7,1.5-3cm</td>
<td>Mild Autogenous vaccine prepared in 70% alcohol</td>
<td></td>
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<tr>
<td>28</td>
<td>Paschimpara, Kampa, N-24 PGN, Shankar Dairy,(Sep-2010)</td>
<td>4(NTP 84)</td>
<td>ND Lactating water buffalo-1,( 4 years)</td>
<td>Teats and udder</td>
<td>Rice grain n =11, 0.5-1cm</td>
<td>Moderate Auto-hemotherapy tried</td>
<td></td>
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<td>29</td>
<td>Dakait Kali Mandir, Kanchrapara, N-24PGN, Ramnurari Dairy,(Sep-2010)</td>
<td>13(NTP 85)</td>
<td>ND Lactating water buffalo-1,( 4 years)</td>
<td>Teats and udder</td>
<td>Fronrod n =8, 1-2 cm</td>
<td>Mild Inj Ivermectin tried</td>
<td></td>
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<tr>
<td>30</td>
<td>High Road, Kampa, N-24 PGN, Awdesh Dairy,(Sep-2010)</td>
<td>4(NTP 86)</td>
<td>ND Lactating water buffalo-1,( 4 years)</td>
<td>Teat crest of all four teats</td>
<td>Rice grain n =9, 1.5-2cm</td>
<td>Moderate Inj Ivermectin tried</td>
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### Table-72

<table>
<thead>
<tr>
<th>Case No.</th>
<th>Location</th>
<th>Breed</th>
<th>Age</th>
<th>Lesion Type</th>
<th>Treatment</th>
<th>Description</th>
<th>Pathological Details</th>
<th>Location</th>
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<tbody>
<tr>
<td>31</td>
<td>Store Block, Kanchrapara, N-24 PGN, Sunil Dairy(Nov-2010)</td>
<td>Cross bred sub adult (Heifer)-1, (3 years)</td>
<td>Teat crest of all four teats</td>
<td>Frond</td>
<td>n =8, 2.5-3cm</td>
<td>Moderate</td>
<td>Inj Ivermectin tried</td>
<td></td>
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<tr>
<td>32</td>
<td>Store Block, Kanchrapara, N-24 PGN, Ray Dairy, (Nov-2010)</td>
<td>ND Lactating water buffalo-1, (4 years)</td>
<td>All four teats around the teat orifice</td>
<td>Rice grain</td>
<td>n =5, 0.5-1cm</td>
<td>Mild</td>
<td>Autohemotherapy tried</td>
<td></td>
</tr>
<tr>
<td>33</td>
<td>Store Block, Kanchrapara, N-24 PGN, Jatan Dairy(Nov-2010)</td>
<td>Adult Murrah she buffalo-1,(5 Years)</td>
<td>Base of the all four teats</td>
<td>Frond</td>
<td>n =16, 0.5-2cm</td>
<td>Moderate</td>
<td>Inj Ivermectin tried</td>
<td></td>
</tr>
<tr>
<td>34</td>
<td>Abdul Jafar Road, Kanchrapara, Rambachan Dairy(Nov-2010)</td>
<td>Cross bred sub adult (Heifer)-1, (3 years)</td>
<td>Teat crest of all four teats</td>
<td>Frond</td>
<td>n =16, 1.5-2cm</td>
<td>Moderate</td>
<td>Autohemotherapy tried</td>
<td></td>
</tr>
<tr>
<td>35</td>
<td>Store Block, Kanchrapara, N-24 PGN, Dharamnath Dairy(Nov-2010)</td>
<td>Sub Adult Murrah she buffalo-1,(2.5 Years)</td>
<td>All four teats around the teat orifice</td>
<td>Frond</td>
<td>n =12, 2-2.5 cm</td>
<td>Moderate</td>
<td>Autohemotherapy tried</td>
<td></td>
</tr>
<tr>
<td>36</td>
<td>Store Block, Kanchrapara, N-24 PGN, Prasad Dairy (Dec-2010)</td>
<td>Sub Adult Murrah she buffalo-1,(2.5 Years)</td>
<td>Fore teats</td>
<td>Frond</td>
<td>n =9, 1-2cm</td>
<td>Mild</td>
<td>Inj Ivermectin tried</td>
<td></td>
</tr>
<tr>
<td>37</td>
<td>Store Block, Kanchrapara, N-24 PGN, Ganesh Dairy(Dec-2010)</td>
<td>Adult Murrah she buffalo-1,(5 Years)</td>
<td>Hind teats only</td>
<td>Frond</td>
<td>n =8, 1-2cm</td>
<td>Mild</td>
<td>Autohemotherapy tried</td>
<td></td>
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<tr>
<td>38</td>
<td>64-Patarshan Road, Garifa, Naihati, N-24 PGN, Das Dairy(Dec-2010)</td>
<td>ND Lactating water buffalo-1,(4 years)</td>
<td>Teats and udder</td>
<td>Rice grain</td>
<td>n =12, 1-2.5 cm</td>
<td>Moderate</td>
<td>Inj Ivermectin tried</td>
<td></td>
</tr>
<tr>
<td>39</td>
<td>64-Patarshan Road, Garifa, Naihati, N-24 PGN, Garib Dairy(Dec-2010)</td>
<td>ND Lactating water buffalo-1, (4 years)</td>
<td>Hind teats only</td>
<td>Frond</td>
<td>n =12, 1-2 cm</td>
<td>Fili form</td>
<td>Inj Ivermectin tried</td>
<td></td>
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<tr>
<td>40</td>
<td>Hazinagar, N-24 PGN, Ramprasad Dairy(Dec-2010)</td>
<td>Sub Adult Murrah she buffalo-1,(3 Years)</td>
<td>All four teats around the teat orifice</td>
<td>Rice grain</td>
<td>n =12, 1.5-3 cm</td>
<td>Moderate</td>
<td>Inj Ivermectin tried</td>
<td></td>
</tr>
<tr>
<td>41</td>
<td>Circus Maidan, Kanchrapara, N-24 PGN, Lakhani Dairy(Dec-2010)</td>
<td>Adult Murrah she buffalo-1,(5 Years)</td>
<td>Fore teats</td>
<td>Rice grain</td>
<td>n =11, 0.5-1 cm</td>
<td>Moderate</td>
<td>Autohemotherapy tried</td>
<td></td>
</tr>
</tbody>
</table>

**Total BTP-41**

Teat papilloma in buffalo (BTP) was almost unknown entity in West Bengal, until this work was undertaken. Based on clinical survey, with a special drive to record the incidence of BTP in both organized and unorganized rural dairy sector in Kalyani and Haringhata (Nadia District), Jhulania (Hooghly District), Naihati, Halishar and Kanchrapara (North 24 Pargana district), forty one BTP cases were ruled out and detail clinical and morphological appearance of the lesions were presented in the table (Table-72). Mild to moderate grade infection with maximal teat involvement and scarcely teats and udder involvement was recorded. BTPs represented varying morphological appearance; either round, elevated lesions (diffuse frond type) or rice grain type arising on either front or rear teats and or all four teats. Grossly two types of lesions were found viz. rice grain shape and frond type.
Table-73: Gist of year wise recorded clinical incidence of cattle and buffalo cutaneous warts including teat papilloma / teat wart in West Bengal

<table>
<thead>
<tr>
<th>Incidence of Cattle/ buffalo cutaneous wart</th>
<th>Year-2008</th>
<th>Year-2009</th>
<th>Year-2010</th>
<th>Year-2011</th>
<th>Year-2012</th>
<th>Total cutaneous wart including teat warts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cattle wart (CCWT + CTP)</td>
<td>05</td>
<td>235</td>
<td>597</td>
<td>413</td>
<td>391</td>
<td>1640</td>
</tr>
<tr>
<td>Buffalo wart (BCWT + BTP)</td>
<td>04</td>
<td>039</td>
<td>048</td>
<td>011</td>
<td>026</td>
<td>129</td>
</tr>
<tr>
<td>Grand total on C&amp;B year wise wart incidence</td>
<td>09</td>
<td>274</td>
<td>645</td>
<td>424</td>
<td>417</td>
<td>1769</td>
</tr>
</tbody>
</table>

Wart lesions were observed as solitary (single wart, n = 1), multiple (2 and up to 50), confluent and or extensive form (n = 50 and above). Extensive or generalized form of papillomatosis was recorded in sixty three (n = 63) numbers of cattle where warts distributed on both sides of the body either scattered, diffused or in confluent form affecting anterior, posterior as well as cranio-caudal body parts (i.e. whole body affection). But most interestingly hardly a very few buffalo had suffered from extensive and or generalized form of warts. The variable sized warts were observed at different sites of the body skin including head, neck, thorax, limbs, back, belly, teats and udder and external genitalia (Figure 1-26).

4.1.2 Clinical survey

Cutaneous papillomatosis (CP), in other word, cutaneous warts (CWTs) including teat papillomas (TP) of both cattle and buffalo was investigated in hot and humid climatic zone of tropical West Bengal. Survey of spontaneous or natural cases of bovine cutaneous papillomatosis (BOCP) or cattle cutaneous warts (CCWT) including bovine teat papillomas (BOTP) or cattle teat papillomas (CTP) and bubaline cutaneous papillomatosis (BUCP) including buffalo cutaneous warts (BCWT) and buffalo teat papillomas (BUTP) were undertaken in different districts of West Bengal. Random survey was carried out as field survey (Table 1-32), farm survey (Table 69) (in organized sector), abattoir survey (Table 70) and as institutional survey (survey in veterinary clinics, by day book inspection, Table 33-68).

The variable sized warts were observed at different sites or at different anatomical location of the skin surface of both cattle and buffaloes, affecting different body parts, mostly arising on eyes, ears, face, head, neck, thorax, limbs, back, belly, axilla, teats and udder, anus and external genitalia. Field survey was undertaken in various dairy farms both in urban and rural areas of Bengal covering certain small and big organized and unorganized dairy farms including scattered small dairy units in the state, cattle markets and abattoirs and the results or the findings on the field, farm, abattoir and institutional survey were summarized in tables (Table 1-70) including special survey intended to record incidences of CTP and BTP (Table 71 & 72).
4.1.3 Epidemiological aspect of the disease

Surveys of cutaneous warts (CWTs) were conducted in various organized and unorganized dairy farms both in rural and urban areas of different districts of West Bengal including large animal slaughter house and Goshalas. Based on field, farm and institutional survey, screened and recorded clinical cases of cutaneous warts as a whole in both cattle and buffalo was one thousand seven hundred sixty nine. Both BOCP and BUCP including CTP and BTP as shown in the tables (Table-1-72) revealed that cattle cutaneous warts (BOCP = 1640) are widely prevalent in dairy and rural cattle of Bengal and papillomatosis in buffalo (BUCP = 129) is comparatively less common than in cattle. The disease is prevailing in West Bengal and is an established fact, based on the survey conducted and represented in tables (Table 1-72). The prevalence of bovine papillomatosis in West Bengal was recorded during the study period particularly in organized sector was 0.28 % to 6.5%. The prevalence was higher in females than males. Among one thousand six hundred forty BOCP cases, three hundred sixty were male (21.95%) and one thousand two hundred eighty were female cattle (78.04%). The prevalence was the highest in cattle in young age group as compared to adult and old animals. The incidence of papillomatosis was found to be much higher in indigenous cattle than in indigenous cattle. Severity of infection as categorized based on number of lesions on the animal body revealed highest incidence of severe grade infection in cattle (n = 63) and very minimum numbers in buffalo (n = 03) whereas in buffaloes, in most of the cases mild to moderate grade infection was noted. In field survey of forty six recorded BCWT cases mild grade infection was observed in eight animals, moderate grade infection was seen in thirty five animals and severe grade infection was seen in three animals. Seasonal affection as noted in CCWT cases in field survey revealed higher incidence in summer (n = 449), followed by winter (n = 329) and rainy (n = 99) respectively revealing percentile seasonal incidence as 51.19%, 31.51% and 11.28% respectively. In regards to gross regional distribution of warts in cattle, the highest affection was observed in anterior region (n = 857). Second highest was the posterior or caudal regional distribution (32.5%). Posterior or caudal affection including CTP was observed in five hundred thirty three (n = 533) and antero-posterior (cranio-caudal) regional affection was noted in one hundred ninety seven (n = 197) animals. Whole body affection was observed in sixty three cases. The percentile affection in regards to gross regional distribution pertaining to anterior, posterior, antro-posterior and whole body affection was 52.25%, 32.50%, 12.01% and 3.84% respectively. Breed predisposition in regards to clinical affection as studied based on field survey for BOCP cases, revealed four hundred sixty six cases in ND and indigenous cattle (male-140 and female-326) and four hundred eleven in cross bred cattle (CBJ male-42, CBJ female-345, HLX male-1 and HLX female-23) and on institutional survey for BOCP cases, showed two hundred eighty five in
ND and indigenous cattle (male-118 and female-167) and two hundred twenty nine in crossbred cattle (CBJ male-19, CBJ female-196, HLX male-0 and HLX female-14). Although the disease is not of much importance, its high infectivity, chronic illness leading to un-thriftiness and the damage of the skin due to generalized warts were matter of concern and economic losses. Extensive warts lead to depreciation in both aesthetic and economic value of the animal due to loss of body condition, hide’s value, increased risk of conditions like mechanical trauma, wounds, haemorrhages, fly blown condition (myiasis), necrotic dermatitis, mastitis, interference in suckling, milking and coitus.

4.1.3.1 Division wise wart incidence

Division wise wart incidence in cattle and buffalo as recorded in field survey has been presented in summarized form, in tables (Table-74-76) reflecting total three hundred seventy two numbers of cattle wart cases (BOCP), \( n = 372 \), CCWT-348 & CTP-24, and eighteen numbers of buffalo wart cases (BUCP), \( n = 18 \), BCWT-12 & BTP-06 in Burdwan Division (Table-74), four hundred twenty numbers of cattle wart cases \( n = 420 \), CCWT-383 & CTP 37 and twenty three numbers of BUCP cases \( n = 23 \), BCWT-11 & BTP-12 in Presidency Division (Table-75) and one hundred numbers of BOCP cases \( n = 100 \), CCWT-79 & CTP-21 and six numbers of BUCP cases (BCWT-04 & BTP-02) in Jalpaiguri Division (Table-76).

Division wise recorded incidence of bovine and bubaline papillomatosis (cattle and buffalo wart cases) during the Field survey period 2009-2012 in West Bengal

**Table-74: Recorded field incidence of the clinical cases of bovine and bubaline papillomatosis (cattle and buffalo wart cases) during the Field survey period 2009-2012 in Burdwan Division of West Bengal**

<table>
<thead>
<tr>
<th>Sl No</th>
<th>Name of the District</th>
<th>CCWT</th>
<th>CTP</th>
<th>Total cattle Wart cases(CWTS)</th>
<th>BCWT</th>
<th>BTP</th>
<th>Total bubaline Wart cases (BWTS)</th>
<th>Total wart case recorded with animal ID</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Bankura (BKU)</td>
<td>118</td>
<td>01</td>
<td>119</td>
<td>08</td>
<td>02</td>
<td>10</td>
<td>129 (BKU 1- BKU 129)</td>
</tr>
<tr>
<td>2</td>
<td>Birbhum (BBM)</td>
<td>36</td>
<td>05</td>
<td>41</td>
<td>01</td>
<td>04</td>
<td>05</td>
<td>46 (BBM 1- BBM 46)</td>
</tr>
<tr>
<td>3</td>
<td>Burdwan (BDN)</td>
<td>52</td>
<td>03</td>
<td>55</td>
<td>03</td>
<td>NIL</td>
<td>03</td>
<td>58 (BDN 1-BDN 58)</td>
</tr>
<tr>
<td>4</td>
<td>Purulia (PRL)</td>
<td>21</td>
<td>02</td>
<td>23</td>
<td>NIL</td>
<td>NIL</td>
<td>NIL</td>
<td>21 (PRL 1-PRL 21)</td>
</tr>
<tr>
<td>5</td>
<td>West Midnapur (WMP)</td>
<td>43</td>
<td>03</td>
<td>46</td>
<td>NIL</td>
<td>NIL</td>
<td>NIL</td>
<td>46 (WMP 1- WMP 46)</td>
</tr>
<tr>
<td>6</td>
<td>East Midnapur (EMP)</td>
<td>78</td>
<td>10</td>
<td>88</td>
<td>NIL</td>
<td>NIL</td>
<td>NIL</td>
<td>88 (EMP 1- EMP-88)</td>
</tr>
<tr>
<td></td>
<td>Grand Total</td>
<td>348</td>
<td>24</td>
<td>372</td>
<td>12</td>
<td>06</td>
<td>18</td>
<td>Total Wart Cases: 390</td>
</tr>
</tbody>
</table>

Summary of recorded field incidence of cattle and buffalo warts in Burdwan Division: Total Wart Cases in cattle and buffalo: \( n = 390 \), Cattle cutaneous wart percentage \( (n = 348) \) i.e. CCWT\% = 89.23\%, Cattle teat papilloma percentage \( (n = 24) \) i.e. CTP\% = 6.15\%,
Buffalo cutaneous wart percentage (n = 12) i.e. 3.07%, Buffalo teat wart percentage (n = 06) i.e. 1.53%: Incidence of cattle wart (n = 372) percentage (CWT %) = 95.38%, Incidence of buffalo wart (n = 18) percentage (BWT %) = 4.6: Cattle cutaneous wart percentage (n = 348), i.e. CCWT % = 93.54%, cattle teat wart percentage, (n = 24), i.e. CTP % = 6.45%: Buffalo cutaneous wart percentage, (n = 12), i.e. BCWT % = 66.66%, Buffalo teat wart percentage, (n = 06), i.e. BTWT % = 33.33%

Table -75: Recorded field incidence of the clinical cases of bovine and bubaline papillomatosis (cattle and buffalo wart cases) during the Field survey period 2009-2012 in Presidency Division of West Bengal

<table>
<thead>
<tr>
<th>SL No</th>
<th>Name of the District</th>
<th>CCWT</th>
<th>CTP (CTWT)</th>
<th>Total cattle Wart cases (CWTS)</th>
<th>BCWT</th>
<th>BTP (BTWT)</th>
<th>Total bubaline Wart cases(BWTS)</th>
<th>Total wart case recorded with animal ID</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Howrah (HWH)</td>
<td>18</td>
<td>02</td>
<td>20</td>
<td>01</td>
<td>NIL</td>
<td>01</td>
<td>21 (HWH-1- HWH-21)</td>
</tr>
<tr>
<td>2</td>
<td>Nadia (NDA)</td>
<td>95</td>
<td>15</td>
<td>110</td>
<td>01</td>
<td>01</td>
<td>02</td>
<td>112 (NDA-1- NDA-112)</td>
</tr>
<tr>
<td>3</td>
<td>North 24 Pargana (NTP)</td>
<td>49</td>
<td>02</td>
<td>51</td>
<td>05</td>
<td>04</td>
<td>09</td>
<td>60 (NTP-1 – NTP-60)</td>
</tr>
<tr>
<td>4</td>
<td>South 24 Pargana (STP)</td>
<td>103</td>
<td>02</td>
<td>105</td>
<td>NIL</td>
<td>NIL</td>
<td>NIL</td>
<td>105 (STP-1 – STP-105)</td>
</tr>
<tr>
<td>5</td>
<td>Hooghly (HLY)</td>
<td>84</td>
<td>04</td>
<td>88</td>
<td>NIL</td>
<td>NIL</td>
<td>NIL</td>
<td>88 (STP-1 – STP-88)</td>
</tr>
<tr>
<td>6</td>
<td>Murshidabad (MSD)</td>
<td>24</td>
<td>07</td>
<td>31</td>
<td>03</td>
<td>NIL</td>
<td>NIL</td>
<td>34 (MSD-1 – MSD-34)</td>
</tr>
<tr>
<td>7</td>
<td>Kolkata (KKT)</td>
<td>10</td>
<td>05</td>
<td>15</td>
<td>01</td>
<td>07</td>
<td>08</td>
<td>23 (KKT 1-KKT 23)</td>
</tr>
<tr>
<td></td>
<td>Grand Total</td>
<td>383</td>
<td>37</td>
<td>420</td>
<td>11</td>
<td>12</td>
<td>23</td>
<td>Total Wart Case Recorded : 443</td>
</tr>
</tbody>
</table>

Summary of recorded field incidence of cattle and buffalo warts in Presidency Division: Total Wart Cases in cattle and buffalo: n = 443, Cattle cutaneous wart percentage (n = 383) i.e. CCWT% = 86.45%, Cattle teat papilloma percentage (n = 37) i.e. CTP% = 8.35%, Buffalo cutaneous wart percentage (n = 11) i.e. 2.48%, Buffalo teat wart percentage (n = 12) i.e. 2.70%: Incidence of cattle wart percentage was 94.80% (, n = 420, i.e. CWT % = 94.80%) and Incidence of buffalo wart percentage was 5.19% (, n = 23, i.e. BWT % = 5.19%). Cattle cutaneous wart percentage, n = 383, i.e. CCWT % = 91.19%, cattle teat wart percentage, n = 37, i.e. CTP % = 8.80%. Buffalo cutaneous wart percentage, n = 11, i.e. BCWT % = 47.82%, Buffalo teat wart percentage, n =12, BTWT% = 52.17%

Table-76: Recorded field incidence of the clinical cases of bovine and bubaline papillomatosis (cattle and buffalo wart cases) during the Field survey period 2009-2012 in Jalpaiguri Division of West Bengal

<table>
<thead>
<tr>
<th>SL No</th>
<th>Name of the District</th>
<th>CCWT</th>
<th>CTP (CTWT)</th>
<th>Total cattle Wart cases (CWTS)</th>
<th>BCWT</th>
<th>BTP</th>
<th>Total bubaline Wart cases(BWTS)</th>
<th>Total wart case recorded with animal ID</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Darjeeling (DJG)</td>
<td>38</td>
<td>05</td>
<td>43</td>
<td>NIL</td>
<td>NIL</td>
<td>NIL</td>
<td>43 (DJG-1-DJG-43)</td>
</tr>
<tr>
<td>2</td>
<td>Jalpaiguri (JPG)</td>
<td>10</td>
<td>05</td>
<td>15</td>
<td>NIL</td>
<td>NIL</td>
<td>NIL</td>
<td>15 (JPG-1- JPG-15)</td>
</tr>
<tr>
<td>3</td>
<td>Maldaha (MDH)</td>
<td>24</td>
<td>11</td>
<td>35</td>
<td>04</td>
<td>02</td>
<td>06</td>
<td>06 (MDH-1-MDH-41)</td>
</tr>
<tr>
<td>4</td>
<td>Coochbehar (CBR)</td>
<td>07</td>
<td>NIL</td>
<td>07</td>
<td>NIL</td>
<td>NIL</td>
<td>NIL</td>
<td>105(CBR-1 – CBR-07)</td>
</tr>
<tr>
<td>5</td>
<td>Uttar Dinajpur</td>
<td>NIL</td>
<td>NIL</td>
<td>NIL</td>
<td>NIL</td>
<td>NIL</td>
<td>NIL</td>
<td>NIL</td>
</tr>
</tbody>
</table>
Summary of recorded field incidence of cattle and buffalo warts in Jalpaiguri Division: Total Wart Cases in cattle and buffalo: n = 106, Cattle cutaneous wart percentage (n = 79) i.e. CCWT% = 74.52%, Cattle teat papilloma percentage (n = 21) i.e. CTP% = 19.81%, Buffalo cutaneous wart percentage (n = 04) i.e. BCWT= 3.77%, Buffalo teat wart percentage (n = 02) i.e. BTP = 5.66%: Incidence of cattle wart percentage, (Total wart cases, n = 100), i.e. CWT% = 94.33%, Incidence of buffalo wart percentage, (n = 06), i.e. BWT % = 5.66%.

Cattle cutaneous wart percentage, (n = 79), i.e. CCWT % = 79%, cattle teat wart percentage, (n = 21), i.e. CTP % = 21% and Buffalo cutaneous wart percentage (n = 04), i.e. BCWT % = 66.66%, Buffalo teat wart percentage (n = 02), i.e. BTWT% = 33.33%

Institutional survey of bovine and bubaline papillomatosis in Veterinary Clinics of West Bengal

Recorded division wise clinical incidence of both cattle and buffaloes obtained in institutional survey has been presented in tables (Table-77-79) that revealed total two hundred sixty five numbers of cattle wart cases (BOCP), (n = 265, CCWT-220 & CTP-45 ), and eleven numbers of buffalo wart cases (BUCP), (n = 11, BCWT-10 & BTP-01) in Burdwan Division (Table-77), one hundred thirteen numbers of cattle wart cases (n = 113, CCWT-95 & CTP -18) and three numbers of BCWT cases and no BTP case in Presidency Division (Table-78) and one hundred nineteen numbers of BOCP cases ( n = 119, CCWT- 100 & CTP-19) and three numbers of BCWT (n = 3) cases in Jalpaiguri Division (Table-79).

Table -77: Recorded incidence of clinical cases of bovine and bubaline papillomatosis (cattle and buffalo wart cases) during the Institutional survey period 2009-2012 in Burdwan Division of West Bengal

<table>
<thead>
<tr>
<th>Sl No</th>
<th>Name of the District</th>
<th>CCWT</th>
<th>CTP</th>
<th>Total cattle Wart cases</th>
<th>BCWT</th>
<th>BTP</th>
<th>Total bubaline Wart cases</th>
<th>Total wart case recorded with animal ID</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Bankura (BKU)</td>
<td>41</td>
<td>07</td>
<td>48</td>
<td>NIL</td>
<td>NIL</td>
<td>48 (BKU-130-177)</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Birbhum (BBM)</td>
<td>28</td>
<td>03</td>
<td>31</td>
<td>01</td>
<td>NIL</td>
<td>32 (BBM-47-78)</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Burdwan (BDN)</td>
<td>59</td>
<td>22</td>
<td>81</td>
<td>07</td>
<td>NIL</td>
<td>88 (BDN-59-146)</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Purulia (PRL)</td>
<td>49</td>
<td>06</td>
<td>55</td>
<td>NIL</td>
<td>NIL</td>
<td>55 (PRL-22-76)</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>West Midnapur (WMP)</td>
<td>17</td>
<td>04</td>
<td>21</td>
<td>02</td>
<td>01</td>
<td>03</td>
<td>24 (WMP-47-67)</td>
</tr>
<tr>
<td>6</td>
<td>East Midnapur (EMP)</td>
<td>26</td>
<td>03</td>
<td>29</td>
<td>NIL</td>
<td>NIL</td>
<td>29 (EMP-89-117)</td>
<td></td>
</tr>
<tr>
<td>Grand Total</td>
<td>220</td>
<td>45</td>
<td>265</td>
<td>10</td>
<td>01</td>
<td>11</td>
<td>Total Wart Cases: 276</td>
<td></td>
</tr>
</tbody>
</table>

Summary of recorded incidence of clinical cases of bovine and bubaline papillomatosis (cattle and buffalo wart cases) in Burdwan Division: Total Wart Cases in cattle
and buffalo: n = 276, Cattle cutaneous wart percentage (n = 220) i.e. CCWT% = 79.71%, Cattle teat papilloma percentage (n = 45) i.e. CTP% = 16.30%, Buffalo cutaneous wart percentage (n = 10) i.e. BCWT= 3.62%, Buffalo teat wart percentage (n = 01) i.e. BTP = 0.36%

Among total recorded incidence of wart cases, cattle wart (CWT %) = 96.01% and incidence of buffalo wart (BWT %) = 3.98%: Among recorded BOCP, Cattle cutaneous wart (n = 220), i.e. CCWT % = 83.01% and cattle teat wart, n = 45, i.e. CTP % = 16.98%; whereas among recorded BUCP, Buffalo cutaneous wart, n = 10, i.e. BCWT %) = 90.90%, Buffalo teat wart, n = 01, i.e. BTWT% = 9.09%

Table-78: Recorded incidence of clinical cases of bovine and bubaline papillomatosis (cattle and buffalo wart cases) during the Institutional survey period 2009-2012 in Presidency Division of West Bengal

<table>
<thead>
<tr>
<th>Sl No</th>
<th>Name of the District</th>
<th>CCWT</th>
<th>CTP</th>
<th>Total cattle Wart cases</th>
<th>BCWT</th>
<th>BTP</th>
<th>Total bubaline Wart cases</th>
<th>Total wart case recorded with animal ID</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Howrah (HWH)</td>
<td>14</td>
<td>04</td>
<td>18 (HWH-22-39)</td>
<td>NIL</td>
<td>NIL</td>
<td>NIL</td>
<td>18 (HWH-22-39)</td>
</tr>
<tr>
<td>2</td>
<td>Nadia (NDA)</td>
<td>20</td>
<td>02</td>
<td>22 (NDA-113-134)</td>
<td>NIL</td>
<td>NIL</td>
<td>NIL</td>
<td>22 (NDA-113-134)</td>
</tr>
<tr>
<td>3</td>
<td>North 24 Pargana (NTP)</td>
<td>14</td>
<td>01</td>
<td>15 (NTP-61-75)</td>
<td>NIL</td>
<td>NIL</td>
<td>NIL</td>
<td>15 (NTP-61-75)</td>
</tr>
<tr>
<td>4</td>
<td>South 24 Pargana (STP)</td>
<td>07</td>
<td>03</td>
<td>10 (STP-106-116)</td>
<td>NIL</td>
<td>01</td>
<td>01</td>
<td>11 (STP-106-116)</td>
</tr>
<tr>
<td>5</td>
<td>Hooghly (HLY)</td>
<td>21</td>
<td>01</td>
<td>22 (HLY-89-110)</td>
<td>NIL</td>
<td>NIL</td>
<td>NIL</td>
<td>22 (HLY-89-110)</td>
</tr>
<tr>
<td>6</td>
<td>Murshidabad (MSD)</td>
<td>19</td>
<td>07</td>
<td>26 (MSD-35-62)</td>
<td>NIL</td>
<td>02</td>
<td>02</td>
<td>28 (MSD-35-62)</td>
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<tr>
<td>7</td>
<td>Kolkata (KKT)</td>
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<tr>
<td></td>
<td>Grand Total</td>
<td>95</td>
<td>18</td>
<td>113 (Total Wart Case Recorded : 116)</td>
<td>03</td>
<td>NIL</td>
<td>NIL</td>
<td>Total Wart Case Recorded : 116</td>
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</tbody>
</table>

Summary of recorded incidence of clinical cases of bovine and bubaline papillomatosis (cattle and buffalo wart cases) in Presidency Division: Total Wart Cases in cattle and buffalo: n = 116, Cattle cutaneous wart percentage (n = 95) i.e. CCWT% = 81.89%, Cattle teat papilloma percentage (n = 18) i.e. CTP% = 15.51%, Buffalo cutaneous wart percentage (n = 03) i.e. BCWT= 2.58%, Buffalo teat wart percentage (n = 0) i.e. BTP = 0%

Incidence of cattle wart percentage, n = 113 (CWT %) = 97.41% and Incidence of buffalo wart percentage, n = 03 (BWT %) = 2.58%

Cattle cutaneous wart percentage, n=95(CCWT %) = 84.07%, cattle teat wart percentage, n=18 (CTP %) = 15.92%

Buffalo cutaneous wart percentage, n = (BCWT %) = 100%, Buffalo teat wart, n = 0 (BTWT %) = 0%
Table-79: Recorded incidence of clinical cases of bovine and bubaline papillomatosis (cattle and buffalo wart cases) during the Institutional survey period 2009-2012 in Jalpaiguri Division of West Bengal

<table>
<thead>
<tr>
<th>Sl No</th>
<th>Name of the District</th>
<th>CCWT</th>
<th>CTP</th>
<th>Total cattle Wart cases</th>
<th>BCWT</th>
<th>BTP</th>
<th>Total bubaline Wart cases</th>
<th>Total wart case recorded with animal ID</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Darjeeling (DJD)</td>
<td>11</td>
<td>03</td>
<td>14</td>
<td>NIL</td>
<td>NIL</td>
<td>14 (DJD-44-57)</td>
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<tr>
<td>2</td>
<td>Jalpaiguri (JPG)</td>
<td>23</td>
<td>02</td>
<td>25</td>
<td>01</td>
<td>NIL</td>
<td>26 (JPG-16-41)</td>
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<tr>
<td>3</td>
<td>Malda (MDH)</td>
<td>25</td>
<td>06</td>
<td>31</td>
<td>02</td>
<td>NIL</td>
<td>33 (MDH-42-74)</td>
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<tr>
<td>4</td>
<td>Coochbehar (CBR)</td>
<td>06</td>
<td>02</td>
<td>08</td>
<td>NIL</td>
<td>NIL</td>
<td>08 (CBR-8-15)</td>
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<tr>
<td>5</td>
<td>UtiDinajpur (UDP)</td>
<td>25</td>
<td>06</td>
<td>31</td>
<td>NIL</td>
<td>NIL</td>
<td>31 (UDP-1-31)</td>
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<td>Dakshin Dinajpur (DDP)</td>
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<td>10 (DDP-1-10)</td>
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<td>Grand Total</td>
<td>100</td>
<td>19</td>
<td>119</td>
<td>03</td>
<td>NIL</td>
<td>Total Wart Case Recorded : 122</td>
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</tbody>
</table>

Summary of recorded incidence of clinical cases of bovine and bubaline papillomatosis (cattle and buffalo wart cases) in Jalpaiguri Division: Total Wart Cases in cattle and buffalo: n = 122, Cattle cutaneous wart percentage (n=100) i.e. CCWT%=81.96%, Cattle teat papilloma percentage (n = 19) i.e. CTP% = 15.57%, Buffalo cutaneous wart percentage (n = 03) i.e. BCWT = 2.45%, Buffalo teat wart percentage (n=0) i.e. BTP=0%

Incidence of cattle wart (CWT %) = 97.54%, Incidence of buffalo wart (BWT %) =2.45%

Cattle cutaneous wart (CCWT %) = 84.03% and cattle teat wart (CTP %) =15.96%; Buffalo cutaneous wart (BCWT %) = 100%, Buffalo teat wart (BTWT %) = 0%

An attempt was also made to investigate the trends of the disease occurrence in different districts of WB and for what year wise and district wise recorded clinical incidence of both BOCP and BUCP was studied and the result has been presented in table (Table-80)

Table -80: Year wise and district wise recorded clinical incidence of bovine and bubaline cutaneous papillomatosis including teat papillomatosis in West Bengal

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<tbody>
<tr>
<td>1</td>
<td>Bankura Field (BKU-129)</td>
<td>19</td>
<td>04</td>
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<td>Bankura Clinics (BKU-48)</td>
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<td>Birbhum Field (BBM-46)</td>
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<td>Birbhum Clinics (BBM-32)</td>
<td>NIL</td>
<td>NIL</td>
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<td>NIL</td>
<td>19</td>
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<td>Burdwan Field (BDN-58)</td>
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<td>3</td>
<td>Burdwan Clinics (BDN-88)</td>
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<td>25</td>
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<td>46</td>
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<td>Purulia Field (PRL-23)</td>
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<td>Purulia Clinics (PRL-55)</td>
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<td>East Midnapur Field (EMP-88)</td>
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<td>East Midnapur Clinics (EMP-29)</td>
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<td>West Midnapur Clinics (WMP-24)</td>
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<td>Howrah Field (HWH-21)</td>
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<td>Howrah Clinics (HWH-18)</td>
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<td>Howrah Farm (HWH-CTP-22+CTP-6)=Total-28</td>
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<td>Hooghly Field (HLY-88)</td>
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<td>Kolkata Field Abattoir (KKT-23)</td>
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<td>North 24 Pargana Clinics</td>
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**Results** | 262
The incidence of BOCP in North Bengal versus South Bengal (Table-81) was (n = 219/1640) 13.35% and (n = 1421/1640) 86.64% respectively. The disease CCWT recorded in North Bengal was (n = 179, 10.9%) and in South Bengal it was (n = 1254, 76.46%) and CTP recorded in North Bengal was (n = 40) 2.43% and in South Bengal it was (n = 168) 10.24%.

Table-81 : Incidence of BOCP or cattle wart (CCWT&CTP) in North Bengal v/s South Bengal

<table>
<thead>
<tr>
<th>Sl No</th>
<th>Field Survey</th>
<th>Incidence % in Field survey</th>
<th>Clinics Survey</th>
<th>Incidence % Clinics Survey</th>
<th>Farm Survey</th>
<th>Incidence % in Farm survey</th>
<th>Total recorded wart case</th>
<th>Overall Incidence %</th>
</tr>
</thead>
<tbody>
<tr>
<td>North Bengal</td>
<td>CCWT-79 CTP-21, Total=100</td>
<td>n = 100, 11.19%</td>
<td>CCWT-100 CTP-19 Total=119</td>
<td>n =119, 23.94%</td>
<td>CCWT-NIL CTP-NIL</td>
<td>NIL</td>
<td>CCWT-179 CTP-40 Total=219</td>
<td>n =219 13.35%</td>
</tr>
<tr>
<td>South Bengal</td>
<td>CCWT-731 CTP-62 Total = 793</td>
<td>n = 792, 88.80%</td>
<td>CCWT-315 CTP-63 Total = 478</td>
<td>n =378, 76.05%</td>
<td>CCWT-208 CTP-43</td>
<td>n =251, 100%</td>
<td>CCWT-1254 CTP-167 Total = 1421</td>
<td>1421 86.64%</td>
</tr>
<tr>
<td>Total</td>
<td>893</td>
<td>597</td>
<td>251</td>
<td>1640</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Altogether one thousand six hundred forty numbers (n = 1640) of cattle wart cases were recorded during field investigation including survey in unorganized small dairy farms (n = 877), survey in veterinary clinics (n = 497), survey in organised farms (n = 251) and in abattoir survey (n = 15). Year wise recorded incidence of BOCP has been summarized in tabular form (Table-82) which revealed higher incidence during 2010, followed by 2012, 2011, 2009

Table-82: Year wise recorded incidence of cattle wart (Bovine papilloma) by different mode of survey in West Bengal during the survey period December-2008 to January-2013

<table>
<thead>
<tr>
<th>SL No</th>
<th>Survey types with recorded clinical incidence</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Random Field Survey including abattoir survey (Total recorded case, n = 892)</td>
<td>04</td>
<td>144</td>
<td>446</td>
<td>132</td>
<td>163</td>
<td>03</td>
</tr>
<tr>
<td>2</td>
<td>Institutional survey (Total recorded case, n = 497)</td>
<td>NIL</td>
<td>11</td>
<td>73</td>
<td>210</td>
<td>203</td>
<td>NIL</td>
</tr>
<tr>
<td>3</td>
<td>Organized Farm Survey (Total recorded case, n = 208)</td>
<td>05</td>
<td>62</td>
<td>49</td>
<td>46</td>
<td>46</td>
<td>NIL</td>
</tr>
</tbody>
</table>
Amongst the recorded 1640 cases of cattle warts, cattle cutaneous wart (CCWT) cases were one thousand four hundred thirty three (n = 1433) and the rest two hundred seven (n = 207) number of wart cases were recorded as cattle teat papillomas (CTP, n = 207, Figure-20-22) or cattle teat warts (CTWT, n = 207) cases. All these spontaneous wart cases were recorded during the present investigation in the susceptible bovine population through random survey as village search, farm survey, and institutional search (including the abattoirs) covering all nineteen districts of Bengal (Table1-72).

Besides screening of warts in bovine population, meticulous screening of cutaneous warts including bubaline teat warts were made in the susceptible buffalo population and during the study a total of one hundred twenty nine (n = 129) spontaneous cases of buffalo warts (BWT) were recorded. And among the recorded 129 bubaline wart cases, buffalo cutaneous wart or skin wart cases was fifty nine (n = 59) and the rest seventy cases (n = 70) were recorded as bubaline teat papilloma (BTP) or bubaline teat warts (BTWT). Amongst the cattle wart cases, eight hundred ten (n = 810) number of CCWT were recorded in the field survey and six hundred twenty three (n = 623) numbers in institutional survey were recorded. Out of 623 CCWT cases, two hundred eight (n =208) numbers were recorded in organized farms, and four hundred fifteen (n = 415) numbers were recorded in Veterinary Clinics. Among two hundred seven (n = 207) CTP cases, eighty two (n = 82) number of CTP cases were recorded in the field survey, forty three (n = 43) numbers, in farm survey and eighty two (n = 82) numbers were screened in institutional survey. And amongst the Buffalo wart (BWT, n = 129) cases, BCWT were altogether fifty nine (n = 59) and BUTP were seventy in number (n = 70). During the survey period, twenty seven numbers (n = 27) of BCWT were recorded in field survey and thirty two number of cases (n = 32) were recorded in institutional survey of which sixteen number of cases (n = 16) in farms and another sixteen number of cases (n = 16) were recorded in Veterinary clinics and among seventy number (n = 70) of BUTP cases, twenty number (n = 20) of BUTP cases were recorded in field survey ,forty one number (n = 41) in private dairy farms and nine number (n = 9) of cases were recorded in the institutional search.

4.1.3.2 Breed and gender wise incidence of BOCP

4.1.3.2.1 Gender base affection of BOCP

Gender base affection of BOCP as investigated in the present study has been summarized in table (Table-83) that reflects higher incidence of BOCP in females (n = 1280/1640) 78.06% as compared to male gender (n = 360/1640) 21.93%.
Table 83: Sex wise distribution of Bovine cutaneous wart recorded in different mode of survey in West Bengal

<table>
<thead>
<tr>
<th>Sl. No</th>
<th>CCWT in Male Bovine</th>
<th>CCWT &amp; CTP in Female Bovine</th>
<th>Total Wart cases</th>
<th>Sex wise wart incidence Percentage (M/F %)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Field Survey</td>
<td>185</td>
<td>707</td>
<td>892</td>
<td>M-20.73% F-79.26%</td>
</tr>
<tr>
<td>Farm Survey</td>
<td>21</td>
<td>230</td>
<td>251</td>
<td>M-8.33% F-91.66%</td>
</tr>
<tr>
<td>Clinics Survey</td>
<td>154</td>
<td>343</td>
<td>487</td>
<td>M-31.62% F-68.38%</td>
</tr>
<tr>
<td>Total</td>
<td>360</td>
<td>1280</td>
<td>1640</td>
<td>M-21.93% F-78.06%</td>
</tr>
</tbody>
</table>

4.1.3.2.1 Field level survey

Breed and gender wise recorded incidence of bovine cutaneous papillomatosis including teat papillomatosis in field survey has been presented in table (Table-84-86).

Table -84 : Breed and gender wise recorded incidence of bovine papillomatosis during the Field survey period 2009-2012 in Jalpaiguri Division of West Bengal

<table>
<thead>
<tr>
<th>SL No</th>
<th>Name of the District</th>
<th>Total cattle Wart cases</th>
<th>No of Male ND/Indigenous cattle suffered from wart</th>
<th>No of Female ND/Indigenous Cattle suffered from wart</th>
<th>No of CBJ Male suffered from wart</th>
<th>No of CBJ Female suffered from wart</th>
<th>No of HLX Male suffered from wart</th>
<th>No of HLX Female suffered from wart</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Darjeeling (DJG)</td>
<td>43 (CWT-38 + TP-05)</td>
<td>02</td>
<td>17</td>
<td>01</td>
<td>23</td>
<td>NIL</td>
<td>NIL</td>
</tr>
<tr>
<td>2</td>
<td>Jalpaiguri (JPG)</td>
<td>15 (CWT-10 + TP-05)</td>
<td>02</td>
<td>04</td>
<td>01</td>
<td>05</td>
<td>NIL</td>
<td>03</td>
</tr>
<tr>
<td>3</td>
<td>Malda (MDH)</td>
<td>35 (CWT-24 + TP-11)</td>
<td>03</td>
<td>08</td>
<td>07</td>
<td>15</td>
<td>NIL</td>
<td>02</td>
</tr>
<tr>
<td>4</td>
<td>Cooch Behar (CBR)</td>
<td>07 (CWT-07 + TP-0)</td>
<td>02</td>
<td>02</td>
<td>01</td>
<td>02</td>
<td>NIL</td>
<td>NIL</td>
</tr>
<tr>
<td>5</td>
<td>Uttar Dinajpur (UDP)</td>
<td>NIL</td>
<td>NIL</td>
<td>NIL</td>
<td>NIL</td>
<td>NIL</td>
<td>NIL</td>
<td>NIL</td>
</tr>
<tr>
<td>6</td>
<td>Dakshin Dinajpur (DDP)</td>
<td>NIL</td>
<td>NIL</td>
<td>NIL</td>
<td>NIL</td>
<td>NIL</td>
<td>NIL</td>
<td>NIL</td>
</tr>
<tr>
<td>Grand Total</td>
<td>100 (CWT-79 + TP-21)</td>
<td>09</td>
<td>31</td>
<td>10</td>
<td>45</td>
<td>NIL</td>
<td>05</td>
<td></td>
</tr>
</tbody>
</table>

Summary: JPJ Division- CWT incidence in male individual (n = 19) 19%, CWT incidence in Female individual (n = 81) 81%, Ratio of male and female affection (Gender ratio in CWT affection) =1:4

CWT incidence in Indigenous and nondescript cattle (n = 40) 40%, CWT incidence in crossbred cattle (n = 60) 60%, (CWT incidence in CBJ cattle, n= 55/60, 91.66%, CWT incidence in HLX cattle, (n = 05/60), 8.33%
Table -85 : Breed and gender wise recorded incidence of bovine papillomatosis during the Field survey period 2009-2012 in Presidency Division of West Bengal

<table>
<thead>
<tr>
<th>SL No</th>
<th>Name of the District</th>
<th>Total cattle Wart cases</th>
<th>No of Male ND/Indigenous cattle suffered from wart</th>
<th>No of Female ND/Indigenous Cattle suffered from wart</th>
<th>No of CBJ Male suffered from wart</th>
<th>No of CBJ Female suffered from wart</th>
<th>No of HLX Male suffered from wart</th>
<th>No of HLX Female suffered from wart</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Howrah (HWH)</td>
<td>20 (CWT-18 + TP-02)</td>
<td>04</td>
<td>01</td>
<td>02</td>
<td>11</td>
<td>NIL</td>
<td>02</td>
</tr>
<tr>
<td>2</td>
<td>Nadia (NDA)</td>
<td>110 (CWT-95 + TP-15)</td>
<td>03</td>
<td>45</td>
<td>03</td>
<td>50</td>
<td>01</td>
<td>08</td>
</tr>
<tr>
<td>3</td>
<td>North 24 Pargana (NTP)</td>
<td>52 (CWT-49+ TP-03)</td>
<td>03</td>
<td>15</td>
<td>01</td>
<td>30</td>
<td>NIL</td>
<td>03</td>
</tr>
<tr>
<td>4</td>
<td>South 24 Pargana (STP)</td>
<td>105 (CWT-103 + TP-02)</td>
<td>21</td>
<td>40</td>
<td>11</td>
<td>33</td>
<td>NIL</td>
<td>NIL</td>
</tr>
<tr>
<td>5</td>
<td>Hooghly (HLY)</td>
<td>88 (CWT-84 + TP-04)</td>
<td>09</td>
<td>42</td>
<td>NIL</td>
<td>37</td>
<td>NIL</td>
<td>NIL</td>
</tr>
<tr>
<td>6</td>
<td>Murshidabad (MSD)</td>
<td>31 (CWT-24 + TP-07)</td>
<td>06</td>
<td>10</td>
<td>04</td>
<td>10</td>
<td>NIL</td>
<td>01</td>
</tr>
<tr>
<td>7</td>
<td>Kolkata (KKT)</td>
<td>15(CWT-10 + TP-05)</td>
<td>01</td>
<td>04</td>
<td>01</td>
<td>07</td>
<td>NIL</td>
<td>02</td>
</tr>
<tr>
<td></td>
<td><strong>Total Wart cases</strong></td>
<td><strong>421 (CWT-383 + TP-38)</strong></td>
<td>47</td>
<td>157</td>
<td>22</td>
<td>178</td>
<td>01</td>
<td>16</td>
</tr>
</tbody>
</table>

Summary: PDN Division- CWT incidence in male individual (n = 70) 16.62%, CWT incidence in Female individual (n = 351) 83.37%, Ratio of male and female affection (Gender ratio in CWT affection) = 1:5

CWT incidence in Indigenous and nondescript cattle (n = 204) 48.45%, CWT incidence in crossbred cattle (n = 217) 51.54%, (CWT incidence in CBJ cattle, (n = 200/217), 92.16%, CWT incidence in HLX cattle (n = 17/217), 7.83%)

Table -86: Breed wise and Gender wise recorded incidence of bovine papillomatosis during random Field survey in Burdwan Division, period 2009-2012 in West Bengal

<table>
<thead>
<tr>
<th>SL No</th>
<th>Name of the District</th>
<th>Total cattle Wart cases</th>
<th>No of Male ND/Indigenous cattle suffered from wart</th>
<th>No of Female ND/Indigenous Cattle suffered from wart</th>
<th>No of CBJ Male suffered from wart</th>
<th>No of CBJ Female suffered from wart</th>
<th>No of HLX Male suffered from wart</th>
<th>No of HLX Female suffered from wart</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Bankura (BKU)</td>
<td>119 (CWT-118 + TP-01)</td>
<td>28</td>
<td>42</td>
<td>01</td>
<td>48</td>
<td>NIL</td>
<td>NIL</td>
</tr>
<tr>
<td>2</td>
<td>Birbhum (BBM)</td>
<td>41 (CWT-36 + TP-05)</td>
<td>06</td>
<td>14</td>
<td>07</td>
<td>13</td>
<td>nil</td>
<td>01</td>
</tr>
<tr>
<td>3</td>
<td>Burdwan (BDN)</td>
<td>55 (CWT-52+ TP-03)</td>
<td>05</td>
<td>28</td>
<td>02</td>
<td>18</td>
<td>NIL</td>
<td>02</td>
</tr>
<tr>
<td>4</td>
<td>Purulia (PRL)</td>
<td>23 (CWT-21 + TP-02)</td>
<td>04</td>
<td>15</td>
<td>NIL</td>
<td>03</td>
<td>NIL</td>
<td>01</td>
</tr>
<tr>
<td>5</td>
<td>West Midnapur (WMP)</td>
<td>46 (CWT-4 3+ TP-03)</td>
<td>13</td>
<td>10</td>
<td>NIL</td>
<td>23</td>
<td>NIL</td>
<td>NIL</td>
</tr>
<tr>
<td>6</td>
<td>East Midnapur (EMP)</td>
<td>88 (CWT-78 + TP-10)</td>
<td>29</td>
<td>33</td>
<td>01</td>
<td>25</td>
<td>NIL</td>
<td>NIL</td>
</tr>
<tr>
<td></td>
<td><strong>Total Wart cases</strong></td>
<td><strong>372 (CWT-348 + TP-24)</strong></td>
<td>85</td>
<td>142</td>
<td>11</td>
<td>130</td>
<td>NIL</td>
<td>04</td>
</tr>
</tbody>
</table>
Summary: BDN Division- CWT incidence in male individual (n = 96/372) 25.80%, CWT incidence in Female individual (n = 276/372 = 74.19%, Ratio of male and female affection (Gender ratio in CWT affection) = 1:3

CWT incidence in Indigenous and nondescript cattle (n = 227) (%) = 61.02%, CWT incidence in crossbred cattle (n = 145) (%) = 38.97%, (CWT incidence in CBJ cattle, n = 141 (%) = 37.90%, CWT incidence in HLX cattle, n = 04 (%) = 1.07%)

Among one hundred clinical cases of cattle warts (CCWT-79 & CTP-21) as recorded in JPG Division (Table-84), nine cases were recorded in ND male, thirty one ND female, ten in CBJ male, forty five in CBJ female and five in HLX female. In JPG Division breed wise affection reflects 40% incidence in Indigenous and ND cattle and 60% incidence in cross bred cattle as a whole. In PDN Division (Table-85) among four hundred twenty one clinical cases of cattle warts (CCWT-383 & CTP-38), forty seven cases were recorded in ND male, one hundred fifty seven in ND female, twenty two in CBJ male, one hundred seventy eight in CBJ female and one in HLX male and sixteen in HLX female. In PDN Division breed wise affection reflects 16.62% incidence in Indigenous and ND cattle, and 83.37% incidence in cross bred cattle as a whole. Whereas in BDN Division (Table-86) among three hundred seventy two clinical cases of cattle warts (CCWT-348 & CTP-24), eighty five cases were recorded in ND male, one hundred forty two in ND female, ten in CBJ male, one hundred thirty in CBJ female and only four in HLX female. In BDN Division breed wise affection reflects 61.02% incidence in Indigenous and ND cattle and 38.97% incidence in cross bred cattle as a whole.

4.1.3.2.2 Institutional survey

Breed and gender wise recorded incidence of bovine cutaneous papillomatosis including teat papillomatosis in clinical survey in Veterinary clinics of West Bengal (i.e. Institutional survey) has been presented in table (Table-87-89).

Table-87: Division wise recorded clinical incidence of bovine papillomatosis with special reference to Breed and Gender as per institutional survey in Veterinary Clinics in Burdwan Division

<table>
<thead>
<tr>
<th>SL No</th>
<th>Name of the District</th>
<th>Total cattle Wart cases</th>
<th>No of Male ND/Indigenous cattle suffered from wart</th>
<th>No of Female ND/Indigenous Cattle suffered from wart</th>
<th>No of CBJ Male suffered from wart</th>
<th>No of CBJ Female suffered from wart</th>
<th>No of HLX Male suffered from wart</th>
<th>No of HLX Female suffered from wart</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Bankura (BKU)</td>
<td>48 (CWT-41 + TP-07)</td>
<td>18</td>
<td>09</td>
<td>04</td>
<td>17</td>
<td>NIL</td>
<td>NIL</td>
</tr>
<tr>
<td>2</td>
<td>Birbhum (BBM)</td>
<td>31 (CWT-28 + TP-03)</td>
<td>08</td>
<td>10</td>
<td>02</td>
<td>11</td>
<td>NIL</td>
<td>NIL</td>
</tr>
<tr>
<td>3</td>
<td>Burdwan (BDN)</td>
<td>81 (CWT-59 + TP-22)</td>
<td>20</td>
<td>26</td>
<td>02</td>
<td>27</td>
<td>NIL</td>
<td>06</td>
</tr>
<tr>
<td>4</td>
<td>Purulia (PRL)</td>
<td>55 (CWT-49 + TP-06)</td>
<td>34</td>
<td>12</td>
<td>01</td>
<td>08</td>
<td>NIL</td>
<td>NIL</td>
</tr>
</tbody>
</table>
Total BOCP cases recorded in (Veterinary Clinics) i.e. in Institutional survey under Burdwan Division, n = 265, among which ND and Indigenous male affected, n = 85: Percentile affection of BOCP in ND and Indigenous male = 32.07% , ND and Indigenous female affected, n = 80: Percentile affection of BOCP in ND and Indigenous female = 30.18% , Cross breed male affected, n = 11: Percentile affection of BOCP in Cross breed male = 4.15% Cross breed female affected, n = 89: Percentile affection of BOCP in Cross breed female = 33.58%, CBJ male affected, n = 11, Percentile affection of BOCP in Cross breed Jersey male = 4.15% and CBJ female affected, n = 83, Percentile affection of BOCP in Cross breed Jersey female = 31.32%, HLX male affected, n = 0, HLX female affected, n = 06, Percentile affection of BOCP in HLX female =2.26%

Table -88: Breed and gender wise recorded clinical incidence of bovine papillomatosis in Presidency division during the Institutional (Veterinary Clinics) survey period 2009-2012 in West Bengal

<table>
<thead>
<tr>
<th>SL No</th>
<th>Name of the District</th>
<th>Total cattle Wart cases</th>
<th>No of Male ND/Indigenous cattle suffered from wart</th>
<th>No of Female ND/Indigenous Cattle suffered from wart</th>
<th>No of CBJ Male suffered from wart</th>
<th>No of CBJ Female suffered from wart</th>
<th>No of HLX Male suffered from wart</th>
<th>No of HLX Female suffered from wart</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Howrah (HWH)</td>
<td>18(CWT-14 + TP-04)</td>
<td>04</td>
<td>01</td>
<td>02</td>
<td>11</td>
<td>NIL</td>
<td>NIL</td>
</tr>
<tr>
<td>2</td>
<td>Nadia (NDA)</td>
<td>22 (CWT-20 + TP-02)</td>
<td>04</td>
<td>02</td>
<td>02</td>
<td>14</td>
<td>NIL</td>
<td>NIL</td>
</tr>
<tr>
<td>3</td>
<td>North 24 Pargana (NTP)</td>
<td>15 (CWT-14+ TP-01)</td>
<td>02</td>
<td>06</td>
<td>01</td>
<td>06</td>
<td>NIL</td>
<td>NIL</td>
</tr>
<tr>
<td>4</td>
<td>South 24 Pargana (STP)</td>
<td>10 (CWT-07 + TP-03)</td>
<td>02</td>
<td>01</td>
<td>NIL</td>
<td>06</td>
<td>NIL</td>
<td>01</td>
</tr>
<tr>
<td>5</td>
<td>Hooghly (HLY)</td>
<td>22 (CWT-21 + TP-01)</td>
<td>NIL</td>
<td>10</td>
<td>12</td>
<td>NIL</td>
<td>NIL</td>
<td>NIL</td>
</tr>
<tr>
<td>6</td>
<td>Murshidabad (MSD)</td>
<td>26 (CWT-19 + TP-07)</td>
<td>04</td>
<td>08</td>
<td>01</td>
<td>09</td>
<td>NIL</td>
<td>04</td>
</tr>
<tr>
<td>7</td>
<td>Kolkata (KKT)</td>
<td>NIL</td>
<td>NIL</td>
<td>NIL</td>
<td>NIL</td>
<td>NIL</td>
<td>NIL</td>
<td>NIL</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>113(CWT- 95 + TP-18)</td>
<td>16</td>
<td>28</td>
<td>18</td>
<td>46</td>
<td>NIL</td>
<td>05</td>
</tr>
</tbody>
</table>

Total BOP cases recorded in (Veterinary Clinics) Institutional survey under Presidency Division, was, n = 113, of which ND and Indigenous male affected, was , n = 16: Percentile affection of BOP in ND and Indigenous male = 14.15%, ND and Indigenous female affected, n = 28: Percentile affection of BOP in ND and Indigenous female = 24.77%
Cross breed male affected, n = 18: Percentile affection of BOP in Cross breed male = 15.92% Cross breed female affected, n = 51: Percentile affection of BOP in Cross breed female = 45.13%, CBJ male affected, n = 18, Percentile affection of BOP in Cross breed Jersey male = 15.92% and CBJ female affected, n = 46, Percentile affection of BOP in Cross breed Jersey female = 40.70%, HLX male affected, n = 0, HLX female affected, n = 05, Percentile affection of BOP in HLX female = 4.42%

Table -89: Breed and gender wise recorded clinical incidence of bovine papillomatosis during the Institutional (Veterinary Clinics) survey period 2009-2012 in Jalpaiguri division of West Bengal

<table>
<thead>
<tr>
<th>SL No</th>
<th>Name of the District</th>
<th>District wise total cattle Wart cases</th>
<th>No of Male ND/Indigenous cattle suffered from wart</th>
<th>No of Female ND/Indigenous Cattle suffered from wart</th>
<th>No of CBJ Male suffered from wart</th>
<th>No of CBJ Female suffered from wart</th>
<th>No of HLX Male suffered from wart</th>
<th>No of HLX Female suffered from wart</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Darjeeling (DJG)</td>
<td>14 (CWT-11 + TP-03)</td>
<td>01</td>
<td>11</td>
<td>NIL</td>
<td>02</td>
<td>NIL</td>
<td>NIL</td>
</tr>
<tr>
<td>2</td>
<td>Jalpaiguri (JPG)</td>
<td>25 (CWT-23 + TP-02)</td>
<td>04</td>
<td>12</td>
<td>NIL</td>
<td>09</td>
<td>NIL</td>
<td>NIL</td>
</tr>
<tr>
<td>3</td>
<td>Maldaha (MDH)</td>
<td>35 (CWT-24+ TP-11)</td>
<td>03</td>
<td>08</td>
<td>07</td>
<td>15</td>
<td>NIL</td>
<td>02</td>
</tr>
<tr>
<td>4</td>
<td>Cooch Behar (CBR)</td>
<td>08 (CWT-06 + TP-02)</td>
<td>01</td>
<td>01</td>
<td>01</td>
<td>05</td>
<td>NIL</td>
<td>NIL</td>
</tr>
<tr>
<td>5</td>
<td>Uttar Dinajpur (UDP)</td>
<td>31 (CWT-25 + TP-06)</td>
<td>04</td>
<td>11</td>
<td>01</td>
<td>14</td>
<td>NIL</td>
<td>01</td>
</tr>
<tr>
<td>6</td>
<td>Dakshin Dinajpur (DDP)</td>
<td>10 (CWT-10 + TP-0)</td>
<td>02</td>
<td>05</td>
<td>NIL</td>
<td>03</td>
<td>NIL</td>
<td>NIL</td>
</tr>
<tr>
<td>Grand Total</td>
<td>123 (CWT-99 + TP-24)</td>
<td>15</td>
<td>48</td>
<td>09</td>
<td>48</td>
<td>03</td>
<td>NIL</td>
<td>03</td>
</tr>
</tbody>
</table>

Total BOP cases recorded in (Veterinary Clinics) Institutional survey under Jalpaiguri Division, was, n=123, where ND and Indigenous male affected,was, n=15: Percentile affection of BOP in ND and Indigenous male was, n= 12.19%, ND and Indigenous female affected,was, n = 48: Percentile affection of BOP in ND and Indigenous female was =39.02% , Cross breed male affected, n = 09: Percentile affection of BOP in Cross breed male was =7.31%, Cross breed female affected, n = 51: Percentile affection of BOP in Cross breed female was = 41.46% : CBJ male affected, n = 09, Percentile affection of BOP in Cross breed Jersey male was =7.31% and CBJ female affected, n = 48, Percentile affection of BOP in Cross breed Jersey female =31.92%, HLX male affected, n=0, HLX female affected, n=03 and Percentile affection of BOP in HLX female was = 2.43%

Among two hundred sixty five clinical cases of cattle warts (CCWT-218 & CTP-47)as recorded in BDN Division (Table-87), eighty five cases were recorded in ND male, eighty in ND female, eleven in CBJ male, eighty three in CBJ female and six in HLX female. And among one hundred thirteen clinical cases of cattle warts (CCWT-95 & CTP-
18) as recorded in PDN Division (Table-88), sixteen cases were recorded in ND male, twenty eight ND female, eighteen in CBJ male, forty six in CBJ female and five in HLX female.

In JPG Division (Table-89) among one hundred twenty three clinical cases of cattle warts (CCWT-99 & CTP-24), fifteen cases were recorded in ND male, forty eight in ND female, nine in CBJ male, forty eight in CBJ female and three in HLX female.

### 4.1.3.2.3: Prevalence of Bovine cutaneous and teat papillomatosis

Prevalence of BOCP including CCWT and CTP both as studied during the field survey based on population dynamics of susceptible cattle population in the clinically wart affected herds has been presented in tables (Table-90 for BDN Division, Table-91 for PDN Division and Table-92 for JPG Division). Disease prevalence as studied revealed BOCP in WB was (893/5675) 15.73%. Division wise disease prevalence in BDN division was 16.01%, in PDN division was 15.59% and in JPG division was 15.31%.

**Table-90: Population dynamics of susceptible cattle population in the clinically wart affected herds as surveyed during field survey in Burdwan division**

<table>
<thead>
<tr>
<th>Sl No</th>
<th>Name of the District</th>
<th>Total cattle Wart cases as per field survey</th>
<th>Susceptible ND cattle population</th>
<th>Susceptible CBJ cattle population</th>
<th>Susceptible HLX cattle population</th>
<th>District wise susceptible cattle population</th>
<th>Susceptibility Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Bankura (BKU)</td>
<td>119 (CWT-118 + TP-01)</td>
<td>464</td>
<td>273</td>
<td>NIL</td>
<td>737</td>
<td>16.14%</td>
</tr>
<tr>
<td>2</td>
<td>Birbhum (BBM)</td>
<td>41 (CWT-36 + TP-05)</td>
<td>179</td>
<td>057</td>
<td>05</td>
<td>241</td>
<td>17.01%</td>
</tr>
<tr>
<td>3</td>
<td>Burdwan (BDN)</td>
<td>55 (CWT-52+ TP-03)</td>
<td>296</td>
<td>094</td>
<td>04</td>
<td>394</td>
<td>13.95%</td>
</tr>
<tr>
<td>4</td>
<td>Purulia (PRL)</td>
<td>23 (CWT-21 + TP-02)</td>
<td>128</td>
<td>006</td>
<td>02</td>
<td>136</td>
<td>16.91%</td>
</tr>
<tr>
<td>5</td>
<td>West Midnapur (WMP)</td>
<td>46 (CWT-4 3+ TP-03)</td>
<td>224</td>
<td>082</td>
<td>NIL</td>
<td>306</td>
<td>15.03%</td>
</tr>
<tr>
<td>6</td>
<td>East Midnapur (EMP)</td>
<td>88 (CWT-78 + TP-10)</td>
<td>458</td>
<td>051</td>
<td>NIL</td>
<td>509</td>
<td>17.28%</td>
</tr>
<tr>
<td></td>
<td>Total Wartcases</td>
<td>372 (CWT-348 + TP-24)</td>
<td>1749</td>
<td>563</td>
<td>011</td>
<td>2323</td>
<td>16.01%</td>
</tr>
</tbody>
</table>
Table-91: Population dynamics of susceptible cattle population in the clinically wart affected herds as surveyed during field survey in Presidency Division

<table>
<thead>
<tr>
<th>Sl No</th>
<th>Name of the District</th>
<th>Total cattle Wart cases as per field survey</th>
<th>Susceptible ND cattle population</th>
<th>Susceptible CBJ cattle population</th>
<th>Susceptible HLX cattle population</th>
<th>District wise susceptible cattle population</th>
<th>Susceptibility Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Howrah (HWH)</td>
<td>20 (CWT-18 + TP-02)</td>
<td>069</td>
<td>055</td>
<td>9</td>
<td>133</td>
<td>15.03%</td>
</tr>
<tr>
<td>2</td>
<td>Nadia (NDA)</td>
<td>110 (CWT-95 + TP-15)</td>
<td>402</td>
<td>238</td>
<td>47</td>
<td>687</td>
<td>16.01%</td>
</tr>
<tr>
<td>3</td>
<td>North 24 Pargana (NTP)</td>
<td>52 (CWT-49+ TP-03)</td>
<td>158</td>
<td>182</td>
<td>32</td>
<td>372</td>
<td>13.97%</td>
</tr>
<tr>
<td>4</td>
<td>South 24 Pargana (STP)</td>
<td>105 (CWT-103 + TP-02)</td>
<td>490</td>
<td>067</td>
<td>NIL</td>
<td>557</td>
<td>18.85%</td>
</tr>
<tr>
<td>5</td>
<td>Hooghly (HLY)</td>
<td>88 (CWT-84 + TP-04)</td>
<td>411</td>
<td>172</td>
<td>NIL</td>
<td>583</td>
<td>15.09%</td>
</tr>
<tr>
<td>6</td>
<td>Murshidabad (MSD)</td>
<td>31 (CWT-24 + TP-07)</td>
<td>118</td>
<td>070</td>
<td>3</td>
<td>191</td>
<td>16.23%</td>
</tr>
<tr>
<td>7</td>
<td>Kolkata (KKT)</td>
<td>15(CWT-10 + TP-05)</td>
<td>126</td>
<td>044</td>
<td>6</td>
<td>176</td>
<td>8.52%</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>421(CWT- 383+ TP-38)</td>
<td>1774</td>
<td>828</td>
<td>097</td>
<td>2699</td>
<td>15.59%</td>
</tr>
</tbody>
</table>

Table-92: Population dynamics of susceptible cattle population in the clinically wart affected herds as surveyed during field survey in Jalpaiguri division

<table>
<thead>
<tr>
<th>Sl No</th>
<th>Name of the District</th>
<th>Total cattle Wart cases as per field survey</th>
<th>Susceptible ND cattle population</th>
<th>Susceptible CBJ cattle population</th>
<th>Susceptible HLX cattle population</th>
<th>District wise susceptible cattle population</th>
<th>Susceptibility Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Darjeeling (DJB)</td>
<td>43(CWT-38 + TP-05)</td>
<td>162</td>
<td>096</td>
<td>6</td>
<td>264</td>
<td>16.28%</td>
</tr>
<tr>
<td>2</td>
<td>Jalpaiguri (JPG)</td>
<td>15 (CWT-10 + TP-05)</td>
<td>41</td>
<td>024</td>
<td>10</td>
<td>075</td>
<td>20%</td>
</tr>
<tr>
<td>3</td>
<td>Maldaha (MDH)</td>
<td>35 (CWT-24+ TP-11)</td>
<td>188</td>
<td>057</td>
<td>5</td>
<td>250</td>
<td>14%</td>
</tr>
<tr>
<td>4</td>
<td>Cooch Behar (CBR)</td>
<td>07 (CWT-07 + TP-0)</td>
<td>50</td>
<td>14</td>
<td>NIL</td>
<td>064</td>
<td>10.93%</td>
</tr>
<tr>
<td>5</td>
<td>Uttar Dinajpur (UDP)</td>
<td>NIL</td>
<td>NIL</td>
<td>NIL</td>
<td>NIL</td>
<td>NIL</td>
<td>0%</td>
</tr>
<tr>
<td>6</td>
<td>Dakshin Dinajpur (DDP)</td>
<td>NIL</td>
<td>NIL</td>
<td>NIL</td>
<td>NIL</td>
<td>NIL</td>
<td>0%</td>
</tr>
<tr>
<td></td>
<td>Grand Total</td>
<td>100 (CWT-79 + TP-21)</td>
<td>441</td>
<td>191</td>
<td>021</td>
<td>653</td>
<td>15.31%</td>
</tr>
</tbody>
</table>
4.2 Gross pathological studies

The gross clinico-pathological observations of the field, farms and veterinary clinics in different districts of West Bengal were summarized in table 1-72.

4.2.1 Clinical signs

The onset of the disease was recognized as small, single (solitary) to multiple nodular elevations on the skin surface elsewhere on animal body. The lesions were first seen as round and smooth that soon became rough and horny in the form of cauliflower like lumps in great majority of the affected cases as studied. The lesions in most of the cases were found to first emerge on skin as small as pea and invariably became as large as a tennis ball, if left untreated. These lesions (tumours) were found to persist for long periods and were mostly stalked or pedunculated (i.e. wart with a narrow base and large body), squat or sessile type (i.e. a raised wart with a wide firmly fixed base), small slender warts resembling blunt ended thorns (i.e. tag types) and scarcely discrete, low, and flat or highly elevated circular in appearance. No remarkable changes were observed in body temperature, respiratory and pulse rates in affected animals, except in aggravated case of papillomatosis secondarily infected with bacterial invasion preceded by traumatic injury, bleeding and maggotization (myiasis). The appetite, pulse, rumination, defecation and urination of the infected animals were also normal. In great majority of infected cattle especially in field survey, it was found that the animals had suffered from ecto-parasitism like ticks, lice and mite infestation. Faecal examination of the infected animals, revealed helminthic load mainly fasciola, strongyles and amphistome. The body condition of the heavily infected animals was very poor. Heavy wart infection with chronicity made the affected cattle stunted and was found to lose body condition.

Clinical evaluation revealed that the lump lesions were exophytic tumours, some circumscribed, occasionally ulcerated and others with irregular morphology, with grey and dark colouration, some with presence of hair, adhered to the skin and flat, another pedunculated form with cauliflower aspect and intermediate neo-formations too that assumed characteristics in the sessile and pedunculated lesions. Clinically, CWTs were of varying sizes, rough, brownish, whitish grey and light black colour, irregular (dome, button, and pea) in shape, cauliflower-like, solid masses, elevated, flat and attached by broad base. Animals had mild to moderate grade of infection. Infrequently animals were also severely infected. Diffuse areas of pedunculated pea sized masses, nodular, elongated and small to medium sized cauliflower like warts were seen in severely infected animals affecting multiple anatomical sites or loci. In few animals there was evidence of frequent recurrence and neo-formations.
4.2.2 Severity of infection

According to the number, size and distribution of lesions and depending upon the clinico-pathological condition of the animal owing to BPV infection, the cases were categorized as mild, moderate and severe and the clinical score is represented as mild(+), moderate (++ ) and severe ( +++). Mild grade infection (Figure-1,2) has been categorized based on the lesions either eruptive, growing or matured ones and the numbers ranged from, n = 1 to 10 , irrespective of size and dimension, moderate grade infection(n>10) (Figure-10-12) based on growing and matured lesions appeared on animal skin where numbers exceeded 10 but with the limit of fifty irrespective of size, shape and dimension, and severe grade infection (Figure-14 & 16) based on numerous and or extensive lesions (n>50) irrespective of size and dimension. Number of lesions recorded during screening of clinical cases of papillomatosis, have been described as sporadic, single or a chain of multiple or multiple diffused or cluster of lesions, described as multiple (several) or numerous (n>50) described as extensive and or generalized papillomatosis. At the clinical examination in most severe cases the lesions were observed as small to moderate, circumscribed and overflowed cutaneous horny masses from 0.5 cm to 10 cm in diameter on different anatomical regions of the animal body. About 50 to 250 masses in number were detected in severe cases of cutaneous papillomatosis. Five extensive persistent cases of mixed infection of CCWT and CTWT were recorded, three from Mangolekote Block of Burdwan and two from Patrasayer Block of Bankura district. Tumour growths were varying in shapes and sizes, roughly nodular, pea shaped, low, flat, circular or irregular dome shaped, cauliflower like or club shaped or mixed type. In some animals lesions were extensive and damaged most of the teats.

4.2.2.1 Varying grades of clinical papillomatosis

Bovine papillomatosis (CCWT &CTP) with special reference to its severity of infection during field level survey in three Divisions of WB has been presented in table (Table-93-95).

Table-93: Bovine papillomatosis in Field survey showing summarized data of different grades of clinical papillomatosis based on severity of infection in Burdwan Division

<table>
<thead>
<tr>
<th>SL NO</th>
<th>Name of the District</th>
<th>Total cattle Wart cases as per field survey</th>
<th>Mild grades of infection (+)</th>
<th>Moderate (+++) grades of infection</th>
<th>Severe (++++) grades of infection</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Bankura (BKU)</td>
<td>119 (CWT-118 + TP-01)</td>
<td>40</td>
<td>67</td>
<td>12</td>
</tr>
<tr>
<td>2</td>
<td>Birbhum (BBM)</td>
<td>41 (CWT-36 + TP-05)</td>
<td>03</td>
<td>38</td>
<td>NIL</td>
</tr>
<tr>
<td>3</td>
<td>Burdwan (BDN)</td>
<td>55 (CWT-52+ TP-03)</td>
<td>08</td>
<td>44</td>
<td>03</td>
</tr>
<tr>
<td>4</td>
<td>Purulia (PRL)</td>
<td>23 (CWT-21 + TP-02)</td>
<td>NIL</td>
<td>21</td>
<td>02</td>
</tr>
<tr>
<td>5</td>
<td>West Midnapur (WMP)</td>
<td>46 (CWT-4 3+ TP-03)</td>
<td>13</td>
<td>29</td>
<td>04</td>
</tr>
<tr>
<td>6</td>
<td>East Midnapur (EMP)</td>
<td>88 (CWT-78 + TP-10)</td>
<td>16</td>
<td>65</td>
<td>07</td>
</tr>
<tr>
<td></td>
<td>Total Wart cases</td>
<td>372 (CWT-348 + TP-24)</td>
<td>80</td>
<td>264</td>
<td>28</td>
</tr>
</tbody>
</table>
Percentile incidence of different grades of CWT infection: Mild grade infection (n = 80) = 21.50%, Moderate grade infection (n = 264) = 70.96% and Severe grade infection (n = 28) = 7.52%

In BDN Division (Table-93) among three hundred seventy two (CCWT-348 & CTP-24) cases mild, moderate and severe grade infection were recorded to be 80, 264 and 28 respectively. In PDN Division (Table-94) among four hundred twenty one (CCWT-383 & CTP-38) cases, mild, moderate and severe grade infections were recorded to be 94, 302 and 25 respectively.

Table-94: Bovine papillomatosis in Field survey showing summarized data of different grades of clinical papillomatosis based on severity of infection in Presidency Division

<table>
<thead>
<tr>
<th>SL NO</th>
<th>Name of the District</th>
<th>Total cattle Wart cases as per field survey</th>
<th>Mild grades of infection (+)</th>
<th>Moderate (+++) grades of infection</th>
<th>Severe (++++) grades of infection</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Howrah (HWH)</td>
<td>20 (CWT-18 + TP-02)</td>
<td>05</td>
<td>14</td>
<td>01</td>
</tr>
<tr>
<td>2</td>
<td>Nadia (NDA)</td>
<td>110 (CWT-95 + TP-15)</td>
<td>35</td>
<td>64</td>
<td>11</td>
</tr>
<tr>
<td>3</td>
<td>North 24 Pargana (NTP)</td>
<td>52 (CWT-49+ TP-03)</td>
<td>14</td>
<td>36</td>
<td>02</td>
</tr>
<tr>
<td>4</td>
<td>South 24 Pargana (STP)</td>
<td>105 (CWT-103 + TP-02)</td>
<td>29</td>
<td>73</td>
<td>03</td>
</tr>
<tr>
<td>5</td>
<td>Hooghly (HLY)</td>
<td>88 (CWT-84 + TP-04)</td>
<td>09</td>
<td>42</td>
<td>NIL</td>
</tr>
<tr>
<td>6</td>
<td>Murshidabad (MSD)</td>
<td>31 (CWT-24 + TP-07)</td>
<td>06</td>
<td>22</td>
<td>03</td>
</tr>
<tr>
<td>7</td>
<td>Kolkata (KKT)</td>
<td>15 (CWT-10 + TP-05)</td>
<td>04</td>
<td>10</td>
<td>01</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>421 (CWT-383+ TP-38)</td>
<td>94</td>
<td>302</td>
<td>25</td>
</tr>
</tbody>
</table>

Percentile incidence of different grades of CWT infection: Mild grade infection (n = 94) = 22.32%, Moderate grade infection (n = 302) = 71.73% and Severe grade infection (n = 25) = 5.93%

In JPG Division (Table-95) among one hundred (CCWT-79 & CTP-21) cases mild, moderate and severe grade infection were recorded to be 22, 75 and 3 respectively.

Table-95: Bovine papillomatosis in Field survey showing summarized data of different grades of clinical papillomatosis based on severity of infection in Jalpaiguri Division

<table>
<thead>
<tr>
<th>SL NO</th>
<th>Name of the District</th>
<th>Total cattle Wart cases as per field survey</th>
<th>Mild grades of infection (+)</th>
<th>Moderate (+++) grades of infection</th>
<th>Severe (++++) grades of infection</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Darjeeling (DJG)</td>
<td>43(CWT-38 + TP-05)</td>
<td>16</td>
<td>25</td>
<td>02</td>
</tr>
<tr>
<td>2</td>
<td>Jalpaiguri (JPG)</td>
<td>15 (CWT-10 + TP-05)</td>
<td>03</td>
<td>11</td>
<td>01</td>
</tr>
<tr>
<td>3</td>
<td>Maldaha (MDH)</td>
<td>35 (CWT-24+ TP-11)</td>
<td>01</td>
<td>34</td>
<td>NIL</td>
</tr>
<tr>
<td>4</td>
<td>Cooch Behar (CBR)</td>
<td>07 (CWT-07 + TP-0)</td>
<td>02</td>
<td>05</td>
<td>NIL</td>
</tr>
<tr>
<td>5</td>
<td>Uttar Dinajpur (UDP)</td>
<td>NIL</td>
<td>NIL</td>
<td>NIL</td>
<td>NIL</td>
</tr>
<tr>
<td>6</td>
<td>DakshinDinajpur (DDP)</td>
<td>NIL</td>
<td>NIL</td>
<td>NIL</td>
<td>NIL</td>
</tr>
<tr>
<td>Grand Total</td>
<td></td>
<td>100 (CWT-79 + TP-21)</td>
<td>22</td>
<td>75</td>
<td>03</td>
</tr>
</tbody>
</table>
Percentile incidence of different grades of CWT infection: Mild grade infection (n = 22) = 20.00%, Moderate grade infection (n = 75) = 75.00% and Severe grade infection (n = 03) = 03%

Summary: Overall percentile incidence of different grades of infection recorded in field survey

Total wart cases recorded in field survey: 372(BDN DIV) + 421 (PDN DIV) + 100 (JPG DIV) = 893, of which mild grade infection recorded in field survey was one hundred ninety six. Among the mild grade infective cases, 80 cases were recorded in Burdwan Division (BDN DIV), 94 in Presidency Division (PDN DIV) and 22 in Jalpaiguri Division (JPG DIV). Moderate grade Infection recorded in field Survey was six hundred forty one of which, 264 cases were recorded in Burdwan Division (BDN DIV), 302 in Presidency Division (PDN DIV) and 75 cases were recorded in (JPG DIV).

Severe grade infection recorded in field survey in all three divisions of WB was fifty six of which 28 cases were recorded in Burdwan Division (BDN DIV), 25 cases in Presidency Division (PCD DIV) and only three cases in Jalpaiguri Division (JPG DIV).

In BDN Division (Table-93) among three hundred seventy two (CCWT-348 & CTP-24) cases mild, moderate and severe grade infection were recorded to be 80, 264 and 28 respectively. In PDN Division (Table-94) among four hundred twenty one (CCWT-383 & CTP-38) cases mild, moderate and severe grade infection were recorded to be 94, 302 and 25 respectively. In JPG Division (Table-95) among one hundred (CCWT-79 & CTP-21) cases mild, moderate and severe grade infection were recorded to be 22, 75 and 3 respectively. Results revealed highest number (n = 641) of moderate grade infection followed by mild (n = 196) and severe grades (n = 56) of infection in Bengal.

Severe grade infection recorded in field survey in all three divisions of WB was fifty six of which 28 cases were recorded in Burdwan Division (BDN DIV), 25 cases in Presidency Division (PDN DIV) and only three cases in Jalpaiguri Division (JPG DIV).

Over all percentile incidence of mild grade infection recorded in field survey was (n = 196) = 21.94%, moderate grade (n = 641) = 71.78% and severe grade infection recorded in field survey was (n = 56) 6.00% respectively.

Bovine clinical papillomatosis (CCWT &CTP) with special reference to different grades of infection recorded during survey in Veterinary clinics in three Divisions of WB has also been presented in table (Table-96-98).
Table-96: Bovine papillomatosis in Institutional survey (in Veterinary clinics) showing summarized data of different grades of clinical papillomatosis based on severity of infection in Burdwan Division

<table>
<thead>
<tr>
<th>Sl No</th>
<th>Name of the District</th>
<th>Total cattle Wart cases as per field survey</th>
<th>Mild grades of infection (+)</th>
<th>Moderate (+++) grades of infection</th>
<th>Severe (++++) grades of infection</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Bankura (BKU)</td>
<td>48 (CWT-41+ TP-07)</td>
<td>11</td>
<td>33</td>
<td>04</td>
</tr>
<tr>
<td>2</td>
<td>Birbhum (BBM)</td>
<td>31 (CWT-36 + TP-05)</td>
<td>03</td>
<td>19</td>
<td>09</td>
</tr>
<tr>
<td>3</td>
<td>Burdwan (BDN)</td>
<td>81(CWT-59+ TP-22)</td>
<td>07</td>
<td>67</td>
<td>07</td>
</tr>
<tr>
<td>4</td>
<td>Purulia (PRL)</td>
<td>55 (CWT-49 + TP-06)</td>
<td>05</td>
<td>19</td>
<td>05</td>
</tr>
<tr>
<td>5</td>
<td>West Midnapur (WMP)</td>
<td>21(CWT-17+ TP-04)</td>
<td>02</td>
<td>15</td>
<td>04</td>
</tr>
<tr>
<td>6</td>
<td>East Midnapur (EMP)</td>
<td>29(CWT-26 + TP-03)</td>
<td>05</td>
<td>19</td>
<td>05</td>
</tr>
<tr>
<td></td>
<td>Total Wartcases</td>
<td>265 (CWT-218 + TP-47)</td>
<td>39</td>
<td>189</td>
<td>37</td>
</tr>
</tbody>
</table>

Summary of cattle wart cases recorded in Veterinary Clinics based on severity of infection in Burdwan Division: Percentile recorded incidence of mild grade infection, n=39(14.71%), Percentile recorded incidence of moderate grade infection, n=189(71.32%), Percentile recorded incidence of severe grade infection, n=37(13.96%).

Table-97: Bovine papillomatosis in Institutional survey (in Veterinary clinics) showing summarized data of different grades of clinical papillomatosis based on severity of infection in Presidency Division

<table>
<thead>
<tr>
<th>Sl No</th>
<th>Name of the District</th>
<th>Total cattle Wart cases as per field survey</th>
<th>Mild grades of infection (+)</th>
<th>Moderate (+++) grades of infection</th>
<th>Severe (++++) grades of infection</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Howrah (HWH)</td>
<td>18(CWT-14 + TP-04)</td>
<td>01</td>
<td>16</td>
<td>01</td>
</tr>
<tr>
<td>2</td>
<td>Nadia (NDA)</td>
<td>22 (CWT-20 + TP-02)</td>
<td>04</td>
<td>16</td>
<td>02</td>
</tr>
<tr>
<td>3</td>
<td>North 24 Pargana (NTP)</td>
<td>15 (CWT-14+ TP-01)</td>
<td>02</td>
<td>13</td>
<td>NIL</td>
</tr>
<tr>
<td>4</td>
<td>South 24 Pargana (STP)</td>
<td>10 (CWT-07 + TP-05)</td>
<td>01</td>
<td>06</td>
<td>03</td>
</tr>
<tr>
<td>5</td>
<td>Hooghly (HLY)</td>
<td>22 (CWT-21 + TP-01)</td>
<td>01</td>
<td>18</td>
<td>03</td>
</tr>
<tr>
<td>6</td>
<td>Murshidabad (MSD)</td>
<td>26 (CWT-19 + TP-07)</td>
<td>03</td>
<td>21</td>
<td>02</td>
</tr>
<tr>
<td>7</td>
<td>Kolkata (KKT)</td>
<td>NIL</td>
<td>NIL</td>
<td>NIL</td>
<td>NIL</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>113(CWT- 95+ TP-18)</td>
<td>12</td>
<td>90</td>
<td>11</td>
</tr>
</tbody>
</table>

Summary of cattle wart cases recorded in Veterinary Clinics based on severity of infection in Presidency Division: Total case recorded, n= 113 (CCWT-95& CTP-18): Percentile recorded incidence of mild grade infection, n = 12(10.61%), Percentile recorded incidence of moderate grade infection, n= 90 (79.64%), Percentile recorded incidence of severe grade infection, n = 11(9.73%)

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Table-98: Bovine papillomatosis in Institutional survey (in Veterinary clinics) showing summarized data of different grades of clinical papillomatosis based on severity of infection in Jalpaiguri Division

<table>
<thead>
<tr>
<th>Sl No</th>
<th>Name of the District</th>
<th>Total cattle Wart cases as per field survey</th>
<th>Mild grades of infection (+)</th>
<th>Moderate (+++) grades of infection</th>
<th>Severe (+++++) grades of infection</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Darjeeling (DJG)</td>
<td>14(CWT-11+TP-03)</td>
<td>01</td>
<td>11</td>
<td>02</td>
</tr>
<tr>
<td>2</td>
<td>Jalpaiguri (JPG)</td>
<td>25 (CWT-23+TP-02)</td>
<td>02</td>
<td>17</td>
<td>06</td>
</tr>
<tr>
<td>3</td>
<td>Maldaha (MDH)</td>
<td>31 (CWT-25+TP-06)</td>
<td>01</td>
<td>30</td>
<td>NIL</td>
</tr>
<tr>
<td>4</td>
<td>Cooch Behar (CBR)</td>
<td>08 (CWT-06+TP-02)</td>
<td>NIL</td>
<td>08</td>
<td>NIL</td>
</tr>
<tr>
<td>5</td>
<td>Uttar Dinajpur (UDP)</td>
<td>31(CWT-25+TP-06)</td>
<td>04</td>
<td>20</td>
<td>07</td>
</tr>
<tr>
<td>6</td>
<td>DakshinDinajpur (DDP)</td>
<td>10(CWT-10+TP-0)</td>
<td>01</td>
<td>09</td>
<td>NIL</td>
</tr>
<tr>
<td></td>
<td>Grand Total</td>
<td>119 (CWT-100+TP-19)</td>
<td>09</td>
<td>95</td>
<td>15</td>
</tr>
</tbody>
</table>

Summary of cattle wart cases recorded in Veterinary Clinics based on severity of infection in Jalpaiguri Division: Total case recorded, n = 119 (CCWT-100& CTP-19): Percentile recorded incidence of mild grade infection in veterinary clinics in Jalpaiguri division was (n = 09/119) 7.56%, moderate grade infection( n = 95/119)79.83% and severe grade infection, (n = 15/119)12.60%.

Summary of recorded incidence of BOCP infection in veterinary clinics of Bengal based on severity of infection

Total wart cases recorded in Institutional survey: 265 (BDN DIV) + 113 (PDN DIV) + 119 (JPG DIV) = 497: Mild grade infection recorded in Institutional survey: 39(BDN DIV) + 12 (PCD DIV) + 09 (JPG DIV) =60 and overall percentile incidence of mild grade infection (n=60/497) in Veterinary clinics of Bengal was 12.07%.

Moderate grade infection recorded in Institutional survey was three hundred seventy four (189 in BDN DIV + 90 in PDN DIV + 95 in JPG DIV) and overall percentile incidence of moderate grade infection in Veterinary clinics was 75.25%.

Severe grade infection recorded in Institutional survey was sixty three (37 in BDN DIV + 11 in PDN DIV + 15 in JPG DIV) and overall percentile incidence of severe grade infection (n=63) in Veterinary clinics was12.67%.

In Institutional survey in BDN Division (Table-96) among two hundred sixty five (CCWT-218 & CTP-47) cases, mild, moderate and severe grade infection was recorded to be 39, 189 and 37 respectively. In PDN Division (Table-97) among one hundred thirteen (CCWT-95 & CTP-18) cases mild, moderate and severe grade infection were recorded to be 12, 90 and 11 respectively. In JPG Division (Table-98) among one hundred nineteen (CCWT-100& CTP-19) cases mild, moderate and severe grade infection were recorded to be 9, 95 and 15 respectively. Results revealed highest number (n = 374) of moderate grade infection followed by mild (n = 60) and severe grades (n = 63) of infection in Bengal.
4.2.3 Cattle cutaneous wart (CCWT)

Grossly the recorded clinical cases of CCWT (n = 1433) appeared to be benign cutaneous morbid outgrowths, however, different stages of development, like budding stage, growing (eruptive and or very early) stage of development of the wart crops, developing stage of warts, matured warts, regressing as well as persistent type of warts were recorded. Besides different stages of development of lesions, varying type of growth patterns were also noticed. During the survey, both solitary (single wart), multiple, confluent and or extensive warts (papillomatosis) had been recorded. Complicated, maggotized, flyblown, knocked down warts and aggravated papillomatous conditions were also noted. The neoplasia was cauliflower-shaped with or without pedicles or resembled warts and some of them was bleeding on the surface or had erosive features.

The CCWT cases were observed on different body parts or anatomical locations with either unilateral or bilateral affection showing either anteriorspecificity (Frontal, n = 850) or posterior (caudal, n = 531) or antero-posterior (cranio-caudal) (n = 196) specificity and even in generalized form or whole body affection (n = 63) of the skin surface of the cattle. Grossly, the CCWTs were having variable sizes (size that of a grain, miniature of wart to that of a tennis ball or cauliflower like), either smooth (least cases) or rough or coarse textured (in great majority) and elevated from skin surface by narrow or broad vascular base.

Macroscopically in the excised lesions or tumour fragments it was observed that all the fragments had high density formation of irregular shape, roughly spherical, circumscribed and with varying diameter 0.5 to 8 cm. The surface of those lesions was wrinkled, cornified, grayish and lacking hair. Warts shaped with sharp, rough or wrinkly surfaces with elevations were common. Such elevations and indentations determined the characteristic feature called cauliflower like warts.

CCWTs including teat papillomatosis (CTP) were diagnosed clinically by seeing the morbid papillomatous outgrowths on bovine skin including teats and udder skin. Papillomas located in the teats and udders, made miking difficult and also found to cause a drop in milk production predisposing to mastitis. The CCWT lesions varied from small, firm nodules to large cauliflower like growths. They were greyish to black in most of the cases and were rough and spiny to touch. Some warts were covered by hard encrustation of dung having red raw surface underneath especially at the ano-genital region, perineum (Figure-15), udder and teats. The surface of the lesions was mostly dry, hard, irregular and having cauliflower like growth with or without crusts. The tissue of the tumours was firm, fleshy, flabby and mostly vascular. Due to adverse physiological effects of these warts economic losses such as reduction in milk production and prehension, feeding, mastication, swallowing, obstructed breathing, hindrance in urination were noted in the clinical cases.
During the survey either in farm (n = 208), field (n = 810) or clinics (n = 415), it was found that CCWTs were widely prevalent in dairy and rural cattle of Bengal affecting mostly the local ND cattle of both sexes, indigenous cattle like upgraded Gir, Hariyana, Shaiwal, RedSindhi, Siri and their crosses (cross indigenous and cross exotic both).

Wart like excrescences of the cutaneous surface revealed different external appearance according to their coating. Most of them appeared dry, hard, horny, typical, pedunculated or non pedunculated and keratinized or non-keratinized, and very few appeared excoriated and soft. The surface of the growths contained many fine fissures and some of the tumour surface showed flattish vegetative outgrowths. These warts were found chronic and few persistent in nature and most of them found morphologically specific. The extirpated tumours were mostly grey white and tough in consistency and some were brown or black too (Figure-18). Mild to moderate degree of vascularity to the tumour stroma was also seen while excisional biopsy or on surgical intervention (Figure-19). On transverse section, the tumours were seen to consist of homogeneous, grey white, glossy connective tissue covered by hyperplastic epidermis (Fig-19).

During standard clinical examination, either individual (single/solitary) (CCWT, Figure-1&2; BCWT Figure-24) or clusters of warts, (CCWT, Figure 4,6,7,9); multiple coalescing exuberant growths (Figure-10,11,12) or both (Figure -14&16) at different stages of development (i.e. eruptive and or budding stage ; Figure-1&2, growing or developing stage; Figure-3,5,8,9,10,12,14,15&16; maturing stage , Figure-4,7,9,11,13,14&16, regressing as well as persistent ones, Figure-12) were found in affected animals. Clinically ambiguous cases apparently showing clinical nearness in gross morphologic appearance and or structural nearness to warts were also noted. Grossly, the CCWTs were varying in their dimension, firm, rough, and greyish, black, brown and or lightly coloured, irregular in shape (dome or button with smooth surface), club shaped, papilliferous with single long papillae like projection on the skin or cauliflower like masses with numerous horny papillae and or raised elevated masses, attached by broad base to the underlying skin with a mild to moderate degree of vascularity in each case (Figure-19). Although most of the animals had mild (Figure-1,2,13,15) (n=308) to moderate (n=1203) grade or moderate degree of infection (Figure-10,11,12), severe (Figure-14,16), (n=129) grade of infection owing to abnormally extensive growths and complications owing to fly blown condition (Figure 14, A, B), knocked down growths, trauma, haemorrhage and secondary bacterial invasion were also noted. Concurrent parasitism like ticks infestation and mange mite infection (clinical acariasis) were also noted.

Clinically, CCWTs were of varying sizes (1-8cm), rough, black, grey, brownish in colour, irregular (dome, button, pea shaped and nodular) in shape, cauliflower like masses,
raised, firm, elevated, flat and attached by a broad base. Animals had mild to moderate grade of infection. Of course a good number (n=63) of severely infected clinical cases of CCWTs were recorded. In few animals, CCWTs showed evidence of frequent recurrence and persistence of lesions was also recorded. Age wise distribution of CWTs was observed in calves both male and female (4-12 months), sub adult or juvenile animals (1-3 years), i.e. sub adult bulls and heifers, adult (4 years and above) bulls, bullocks and cows. Amongst the affected cattle that had either suffered from CCWT or CTP, males were three hundred sixty (n=360, 21.95%) whereas females were one thousand two hundred eighty (n=1280, 78.04%).

4.2.4 Major Distribution of wart

Cutaneous papillomatosis in cattle and buffaloes as recorded during the field, institute and farm survey revealed three major distributions of lesions, sporadic, single wart on animal body with either anterior or posterior regional specificity or it's multiple, severaor numerous in number or extensive or generalized papillomatosis with the distribution of lesions all throughout the body(i.e. whole body papillomatosis). Although a good number of extensive papillomatosis cases (n=63) were recorded in cattle (Figure-11, 14, 16), only a very few such case was recorded in buffaloes. Gross regional distributions of warts as studied and recorded in Government Veterinary Clinics (Veterinary Institutes), field and farm cases were presented in tables (Table-99-101).

The CCWT cases were observed on different body parts or anatomical locations with either unilateral or bilateral affection grossly showing either anterior specificity (Frontal, n = 850) or posterior (caudal, n = 531) or antero-posterior (cranio-caudal) (n = 196) specificity and even in generalized form or whole body affection (n = 63) of the skin surface of the cattle. Gross regional specificity of infection or BOCP as recorded in Government Veterinary clinics, field and farm has been presented in tables (Table-99-101).

Table -99: Distribution of warts (lesions) showing gross site / regional specificity among recorded clinical cases of bovine cutaneous papillomatosis in Government Veterinary Clinics in West Bengal

<table>
<thead>
<tr>
<th>Sl No</th>
<th>Name of the district</th>
<th>Total wart cases (CCWT&amp;TP)</th>
<th>Anterior regional affection</th>
<th>Posterior regional affection including TP</th>
<th>Anteroposterior regional affection</th>
<th>Whole body affection</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Bankura (BKU)</td>
<td>(CCWT-41+TP-07) = 48</td>
<td>24</td>
<td>14</td>
<td>10</td>
<td>NIL</td>
<td>TP-07</td>
</tr>
<tr>
<td>2</td>
<td>Burdwan (BDN)</td>
<td>(CCWT-59+TP-22) = 81</td>
<td>32</td>
<td>43</td>
<td>05</td>
<td>01</td>
<td>TP-22</td>
</tr>
<tr>
<td>3</td>
<td>Birbhum (BRM)</td>
<td>(CCWT-28+TP-03) = 31</td>
<td>14</td>
<td>08</td>
<td>05</td>
<td>04</td>
<td>TP-3</td>
</tr>
<tr>
<td>4</td>
<td>Purulia (PRA)</td>
<td>(CCWT-49+TP-06) = 55</td>
<td>33</td>
<td>14</td>
<td>04</td>
<td>04</td>
<td>TP-06</td>
</tr>
<tr>
<td>5</td>
<td>East Midnapur</td>
<td>(CCWT-26+TP-03) = 29</td>
<td>12</td>
<td>07</td>
<td>05</td>
<td>05</td>
<td>TP-03</td>
</tr>
<tr>
<td>Sl No</td>
<td>Name of the district</td>
<td>Total wart cases (CCWT&amp;TP)</td>
<td>Anterior regional affection</td>
<td>Posterior regional affection including TP</td>
<td>Anteroposterior regional affection</td>
<td>Whole body affection</td>
<td>Remarks</td>
</tr>
<tr>
<td>-------</td>
<td>----------------------</td>
<td>---------------------------</td>
<td>-----------------------------</td>
<td>------------------------------------------</td>
<td>----------------------------------</td>
<td>---------------------</td>
<td>---------</td>
</tr>
<tr>
<td>1</td>
<td>Bankura (BKU)</td>
<td>(CCWT-118+TP-01) = 119</td>
<td>78</td>
<td>18+01(TP) = 19</td>
<td>17</td>
<td>05</td>
<td>TP-01</td>
</tr>
<tr>
<td>2</td>
<td>Burdwan (BDN)</td>
<td>(CCWT-52+TP-03) = 55</td>
<td>36</td>
<td>12+03(TP) = 15</td>
<td>02</td>
<td>02</td>
<td>TP-03</td>
</tr>
<tr>
<td>3</td>
<td>Birbhum (BRM)</td>
<td>(CCWT-36+TP-05) = 41</td>
<td>21</td>
<td>10+05(TP) =15</td>
<td>02</td>
<td>03</td>
<td>TP-05</td>
</tr>
<tr>
<td>4</td>
<td>Purulia (PRA)</td>
<td>(CCWT-21+TP-02) = 23</td>
<td>10</td>
<td>07+02(TP) = 09</td>
<td>02</td>
<td>02</td>
<td>TP-02</td>
</tr>
<tr>
<td>5</td>
<td>East Midnapur (EMP)</td>
<td>(CCWT-78+TP-10) = 88</td>
<td>44</td>
<td>18+01(TP) = 28</td>
<td>13</td>
<td>03</td>
<td>TP-10</td>
</tr>
<tr>
<td>6</td>
<td>West Midnapur (WMP)</td>
<td>(CCWT-43+TP-03) = 46</td>
<td>22</td>
<td>13+03(TP) = 16</td>
<td>08</td>
<td>NIL</td>
<td>TP-03</td>
</tr>
<tr>
<td>7</td>
<td>Howrah</td>
<td>(CCWT-18+TP-02) = 20</td>
<td>12</td>
<td>03+02(TP) = 05</td>
<td>03</td>
<td>NIL</td>
<td>TP-02</td>
</tr>
</tbody>
</table>
Table-101: Distribution of warts (lesions) showing gross site / regional specificity among recorded clinical cases of bovine cutaneous papillomatosis In Farm survey (in organized sector) in West Bengal

<table>
<thead>
<tr>
<th>Sl No</th>
<th>Name of the district</th>
<th>Total wart cases (CCWT&amp;TP)</th>
<th>Anterior regional affection</th>
<th>Posterior regional affection including TP</th>
<th>Anteroposterior regional affection</th>
<th>Whole body affection</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Nadia (NDA)</td>
<td>(CCWT-146+TP-0) = 146</td>
<td>91</td>
<td>43</td>
<td>10</td>
<td>02</td>
<td>Total-146</td>
</tr>
<tr>
<td>2</td>
<td>Howrah (HWH)</td>
<td>(CCWT-22+TP-0) = 22</td>
<td>09</td>
<td>07</td>
<td>04</td>
<td>02</td>
<td>Total-22</td>
</tr>
<tr>
<td>3</td>
<td>Kolkata (KOL)</td>
<td>(CCWT-23+TP-0) = 23</td>
<td>12</td>
<td>06</td>
<td>04</td>
<td>01</td>
<td>Total-23</td>
</tr>
<tr>
<td>4</td>
<td>South 24 Pargana (STP)</td>
<td>(CCWT-78+TP-0) = 17</td>
<td>14</td>
<td>01</td>
<td>02</td>
<td>0</td>
<td>Total -17</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>(CCWT-208+TP-0) = 208</td>
<td>126</td>
<td>57</td>
<td>20</td>
<td>05</td>
<td>208</td>
</tr>
</tbody>
</table>

On the other hand gross regional distribution of buffalo cutaneous wart revealed sixteen cases having anterior regional distribution and eight cases having posterior regional distribution.
Besides studies on gross regional specificity of infection, studies were also undertaken to record specific anatomical location or site of infection in respect of anterior, posterior and anterio-posterior (cranio-caudal) specificity of infection both in farm, field and clinics. Regional distribution of BOCP or cattle cutaneous wart (CCWT) with specific anatomical locations including teat papilloma (CTP) based on random field survey (Table-102), institutional survey (Table-105-107) and farm survey (Table-108-110) showing diversified anatomical site or location has been presented in tables (Table-102-110).

Table -102 : Regional distribution of cattle cutaneous wart (CCWT) based on random field survey showing Anterior specificity of infection at varying anatomic site or location (n = 508)

<table>
<thead>
<tr>
<th>Sl No</th>
<th>Location of wart showing Anterior regional affection</th>
<th>Number of warts</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Around eyes/ eye lid/ peri-orbital</td>
<td>36</td>
</tr>
<tr>
<td>2</td>
<td>Around eyes and ear base/ear tip/ear pinna</td>
<td>26</td>
</tr>
<tr>
<td>3</td>
<td>Face (Facial affection only)</td>
<td>04</td>
</tr>
<tr>
<td>4</td>
<td>Ear base/ear tip/ear pinna</td>
<td>17</td>
</tr>
<tr>
<td>5</td>
<td>Face and ear flap/ear base/ear tip/ear pinna (around ears)</td>
<td>07</td>
</tr>
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Table -103 : Regional distribution of bovine cattle cutaneous wart (CCWT) including teat papilloma (CTP) based on random field survey showing posterior specificity of infection reflecting diversified anatomical site or location (n = 244)

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<td>6</td>
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<td>Back</td>
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<td>8</td>
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<td>15</td>
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<td>Perineum and axilla</td>
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<td>Hip and belly</td>
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Table -104: Regional distribution of cattle cutaneous wart (CCWT) based on random field survey showing Antero-posterior/ cranio-caudal specificity of infection at diversified anatomical site or location (n = 112)

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<tr>
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</tr>
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<td>Limbs and trunk</td>
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<td>20</td>
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</tr>
<tr>
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<td>Neck, body and back</td>
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</tr>
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<td>23</td>
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<td>24</td>
<td>Face, neck and body</td>
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<td>25</td>
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<td>26</td>
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<tr>
<td>27</td>
<td>Neck, belly and hind limbs</td>
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<td>Fore head and hind limbs</td>
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<td>Antero-posterior affection recorded in random field survey</td>
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Gross regional distribution of cattle cutaneous wart including teat papilloma representing diversified anatomical site or location based on Veterinary Clinics survey (Day Book Inspection) has been presented below.
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<tr>
<td>1</td>
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<tr>
<td>2</td>
<td>Around eyes and ear base/ear tip/ear pinna</td>
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</tr>
<tr>
<td>3</td>
<td>Face</td>
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</tr>
<tr>
<td>4</td>
<td>Ear base/ear tip/ear pinna</td>
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<td>5</td>
<td>Face and around eyes/ eye lid/ peri-orbital</td>
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<tr>
<td>6</td>
<td>Fore limbs</td>
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<tr>
<td>7</td>
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<td>8</td>
<td>Head, neck and dewlap</td>
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<tr>
<td>10</td>
<td>Neck</td>
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<tr>
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<td>15</td>
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<td>Neck, dewlap and fore limbs</td>
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<td>Shoulder</td>
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<td>Head, neck, face, fore limbs and thorax</td>
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<td>92</td>
<td>Neck and croup</td>
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</tbody>
</table>

**Total** | Anterior specific infection at different anatomical site or location | 220
Table- 106: Regional distribution of cattle cutaneous wart (CCWT) based on veterinary institutional survey showing posterior specificity of infection at diversified anatomical site or location (n = 182)

<table>
<thead>
<tr>
<th>Sl No</th>
<th>Location of wart showing posterior regional affection</th>
<th>Number of warts</th>
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<tr>
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<tr>
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<td>Back</td>
<td>04</td>
</tr>
<tr>
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<td>Back, belly and perium</td>
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</tr>
<tr>
<td>7</td>
<td>Anus and vulva</td>
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</tr>
<tr>
<td>8</td>
<td>Back and belly</td>
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<td>Hind limbs, tail and lumbar</td>
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<td>Axilla and thigh</td>
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<td>Back, lumbar and tail base</td>
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<td>Thigh, vulva and anus</td>
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<tr>
<td><strong>Total</strong></td>
<td><strong>Posterior affection at diversified anatomical site or location on institutional survey</strong></td>
<td><strong>182</strong></td>
</tr>
</tbody>
</table>
Table-107: Regional distribution of cattle cutaneous wart (CCWT) based on veterinary institutional survey showing Antero-posterior specificity of infection at diversified cranio-caudal anatomical site or location (n = 65)

<table>
<thead>
<tr>
<th>Sl No</th>
<th>Location of wart showing posterior regional affection</th>
<th>Number of warts</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Neck and belly</td>
<td>02</td>
</tr>
<tr>
<td>2</td>
<td>Neck, thorax and belly</td>
<td>01</td>
</tr>
<tr>
<td>3</td>
<td>Neck, back and fore limb</td>
<td>01</td>
</tr>
<tr>
<td>4</td>
<td>Chest and belly</td>
<td>01</td>
</tr>
<tr>
<td>5</td>
<td>Muzzle, head, neck and back</td>
<td>02</td>
</tr>
<tr>
<td>6</td>
<td>Fore limbs and belly</td>
<td>07</td>
</tr>
<tr>
<td>7</td>
<td>Head, limbs and trunk</td>
<td>01</td>
</tr>
<tr>
<td>8</td>
<td>Limbs and belly</td>
<td>04</td>
</tr>
<tr>
<td>9</td>
<td>Eyes and belly</td>
<td>01</td>
</tr>
<tr>
<td>10</td>
<td>All four limbs</td>
<td>02</td>
</tr>
<tr>
<td>11</td>
<td>Neck, shoulder, thigh and buttock</td>
<td>01</td>
</tr>
<tr>
<td>12</td>
<td>Head, neck and trunk</td>
<td>03</td>
</tr>
<tr>
<td>13</td>
<td>Fore limbs, neck and barrel</td>
<td>01</td>
</tr>
<tr>
<td>14</td>
<td>Fore limbs, thorax and belly</td>
<td>02</td>
</tr>
<tr>
<td>15</td>
<td>Head, neck and barrel</td>
<td>04</td>
</tr>
<tr>
<td>16</td>
<td>Head, neck and body</td>
<td>01</td>
</tr>
<tr>
<td>17</td>
<td>Head, face and back</td>
<td>01</td>
</tr>
<tr>
<td>18</td>
<td>Limbs and trunk</td>
<td>01</td>
</tr>
<tr>
<td>19</td>
<td>Face, fore limbs and belly</td>
<td>01</td>
</tr>
<tr>
<td>20</td>
<td>Head, neck, fore limbs and belly</td>
<td>01</td>
</tr>
<tr>
<td>21</td>
<td>Neck, dewlap/wither and barrel</td>
<td>01</td>
</tr>
<tr>
<td>22</td>
<td>Head, neck and back</td>
<td>01</td>
</tr>
<tr>
<td>23</td>
<td>Head, ears, neck and belly</td>
<td>01</td>
</tr>
<tr>
<td>24</td>
<td>Face, neck and back</td>
<td>04</td>
</tr>
<tr>
<td>25</td>
<td>Head, neck, barrel and hind limbs</td>
<td>01</td>
</tr>
<tr>
<td>26</td>
<td>Eyes, neck and back</td>
<td>01</td>
</tr>
<tr>
<td>27</td>
<td>Ears, head and trunk</td>
<td>01</td>
</tr>
<tr>
<td>28</td>
<td>Chest, abdomen, thigh and axilla</td>
<td>01</td>
</tr>
<tr>
<td>29</td>
<td>Neck, chest, thigh and belly</td>
<td>01</td>
</tr>
<tr>
<td>30</td>
<td>Neck and hip</td>
<td>01</td>
</tr>
<tr>
<td>31</td>
<td>Ears, eyes and trunk</td>
<td>01</td>
</tr>
<tr>
<td>32</td>
<td>Ears, eyes, neck and trunk</td>
<td>02</td>
</tr>
<tr>
<td>33</td>
<td>Face, neck and body</td>
<td>02</td>
</tr>
<tr>
<td>34</td>
<td>Neck, shoulder and back</td>
<td>01</td>
</tr>
<tr>
<td>35</td>
<td>Fore limbs and back</td>
<td>01</td>
</tr>
<tr>
<td>36</td>
<td>Chest, back and hind limbs</td>
<td>01</td>
</tr>
<tr>
<td>37</td>
<td>Neck, dewlap, brisket and back</td>
<td>01</td>
</tr>
<tr>
<td>38</td>
<td>Head, neck, fore limbs and back</td>
<td>01</td>
</tr>
<tr>
<td>39</td>
<td>Ear, eye, neck and trunk</td>
<td>01</td>
</tr>
<tr>
<td>40</td>
<td>Face, eye, neck and back</td>
<td>01</td>
</tr>
<tr>
<td>41</td>
<td>Neck, groin, axilla and udder</td>
<td>01</td>
</tr>
<tr>
<td>42</td>
<td>Mouth, eyes, eyelids and hind limbs</td>
<td>01</td>
</tr>
<tr>
<td>Total</td>
<td>Antero-posterior affection recorded in veterinary institutional survey</td>
<td>65</td>
</tr>
</tbody>
</table>

Regional Distribution of cattle cutaneous wart including teat papilloma in organized farm survey showing diversified anatomical site or location has been presented below.
Table -108: Regional distribution of cattle cutaneous wart (CCWT) based on organized farm survey showing Anterior specificity of infection at varying anatomic site or location (n = 122)

<table>
<thead>
<tr>
<th>Sl No</th>
<th>Location of wart showing Anterior regional affection</th>
<th>Number of warts</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Around eyes/ eye lid/ peri-orbital</td>
<td>03</td>
</tr>
<tr>
<td>2</td>
<td>Ear, face and neck</td>
<td>04</td>
</tr>
<tr>
<td>3</td>
<td>Poll, face and neck</td>
<td>02</td>
</tr>
<tr>
<td>4</td>
<td>Poll and neck</td>
<td>01</td>
</tr>
<tr>
<td>5</td>
<td>Face and around eyes/ eye lid/ peri-orbital</td>
<td>02</td>
</tr>
<tr>
<td>6</td>
<td>Fore limbs</td>
<td>03</td>
</tr>
<tr>
<td>7</td>
<td>Poll, ear and eyes</td>
<td>01</td>
</tr>
<tr>
<td>8</td>
<td>Eyes, ear and mandible</td>
<td>01</td>
</tr>
<tr>
<td>9</td>
<td>Ear, dewlap, neck and fore limb</td>
<td>01</td>
</tr>
<tr>
<td>10</td>
<td>Ear and eyes</td>
<td>09</td>
</tr>
<tr>
<td>11</td>
<td>Head, face and ear</td>
<td>03</td>
</tr>
<tr>
<td>12</td>
<td>Head, neck and ear</td>
<td>01</td>
</tr>
<tr>
<td>13</td>
<td>Nose and eye</td>
<td>02</td>
</tr>
<tr>
<td>14</td>
<td>Face</td>
<td>02</td>
</tr>
<tr>
<td>15</td>
<td>Face, neck and fore limb</td>
<td>02</td>
</tr>
<tr>
<td>16</td>
<td>Face, neck and thorax</td>
<td>02</td>
</tr>
<tr>
<td>17</td>
<td>Neck and fore limb</td>
<td>04</td>
</tr>
<tr>
<td>18</td>
<td>Poll, ear, face and neck</td>
<td>01</td>
</tr>
<tr>
<td>19</td>
<td>Face and ear</td>
<td>04</td>
</tr>
<tr>
<td>20</td>
<td>Face and neck</td>
<td>02</td>
</tr>
<tr>
<td>21</td>
<td>Face, neck and brisket</td>
<td>01</td>
</tr>
<tr>
<td>22</td>
<td>Head and shoulder</td>
<td>02</td>
</tr>
<tr>
<td>23</td>
<td>Head, neck and thorax</td>
<td>05</td>
</tr>
<tr>
<td>24</td>
<td>Head, neck and eye</td>
<td>01</td>
</tr>
<tr>
<td>25</td>
<td>Face, eyes, and neck</td>
<td>01</td>
</tr>
<tr>
<td>26</td>
<td>Fore limb and ear</td>
<td>01</td>
</tr>
<tr>
<td>27</td>
<td>Neck and thorax</td>
<td>02</td>
</tr>
<tr>
<td>28</td>
<td>Neck and chest</td>
<td>01</td>
</tr>
<tr>
<td>29</td>
<td>Ear, fore limbs and neck</td>
<td>01</td>
</tr>
<tr>
<td>30</td>
<td>Neck and thorax</td>
<td>02</td>
</tr>
<tr>
<td>31</td>
<td>Ear, fore limb and neck</td>
<td>01</td>
</tr>
<tr>
<td>32</td>
<td>Fore limb and inter-scapular region</td>
<td>03</td>
</tr>
<tr>
<td>33</td>
<td>Head and ear</td>
<td>01</td>
</tr>
<tr>
<td>34</td>
<td>Head, ear and eyes</td>
<td>01</td>
</tr>
<tr>
<td>35</td>
<td>Ear and poll</td>
<td>01</td>
</tr>
<tr>
<td>36</td>
<td>Ear, nose and eye brow</td>
<td>01</td>
</tr>
<tr>
<td>37</td>
<td>Neck and inter-scapular region</td>
<td>01</td>
</tr>
<tr>
<td>38</td>
<td>Ear and neck</td>
<td>06</td>
</tr>
<tr>
<td>39</td>
<td>Hump, ear and eyes</td>
<td>01</td>
</tr>
<tr>
<td>40</td>
<td>Head and inter-scapular region</td>
<td>01</td>
</tr>
<tr>
<td>41</td>
<td>Ear and nose</td>
<td>01</td>
</tr>
<tr>
<td>42</td>
<td>Head and shoulder</td>
<td>02</td>
</tr>
<tr>
<td>43</td>
<td>Inter-scapular region</td>
<td>05</td>
</tr>
<tr>
<td>44</td>
<td>Head region</td>
<td>02</td>
</tr>
<tr>
<td>45</td>
<td>Eyes and inter-scapular region</td>
<td>02</td>
</tr>
<tr>
<td>46</td>
<td>Fore limb and chest (thorax)</td>
<td>05</td>
</tr>
<tr>
<td>47</td>
<td>Eye, ear and neck</td>
<td>03</td>
</tr>
<tr>
<td>48</td>
<td>Head, ear, neck and inter-scapular region</td>
<td>01</td>
</tr>
<tr>
<td>49</td>
<td>Face, ear and fore limb</td>
<td>02</td>
</tr>
<tr>
<td>50</td>
<td>Head, face, fore limbs and neck</td>
<td>02</td>
</tr>
</tbody>
</table>
Table -109: Regional distribution of cattle cutaneous wart (CCWT) based on Organized farm survey showing Anterio-posterior specificity of infection at diversified cranio-caudal anatomical site or location (n = 19)

<table>
<thead>
<tr>
<th>Sl No</th>
<th>Location of wart showing anterior affliction</th>
<th>Number of warts</th>
</tr>
</thead>
<tbody>
<tr>
<td>51</td>
<td>Skull</td>
<td>01</td>
</tr>
<tr>
<td>52</td>
<td>Face and ears</td>
<td>01</td>
</tr>
<tr>
<td>53</td>
<td>Head, eye and ear</td>
<td>01</td>
</tr>
<tr>
<td>54</td>
<td>Face, ear, head, neck and fore limb</td>
<td>01</td>
</tr>
<tr>
<td>55</td>
<td>Neck region</td>
<td>04</td>
</tr>
<tr>
<td>56</td>
<td>Fore limbs and thorax</td>
<td>05</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>Anterior specific infection at different anatomical site or location in organized farm survey</td>
<td><strong>122</strong></td>
</tr>
</tbody>
</table>

Table -110: Regional distribution of cattle Cutaneous wart (CCWT) including cattle teat papilloma (CTP) (based on organized farm survey showing posterior specificity of infection at diversified anatomical site or location (n = 105)

<table>
<thead>
<tr>
<th>Sl No</th>
<th>Location of wart showing posterior affliction</th>
<th>Number of warts</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Anal and peri anal region (anal periphery)</td>
<td>01</td>
</tr>
<tr>
<td>2</td>
<td>Axilla</td>
<td>03</td>
</tr>
<tr>
<td>3</td>
<td>Back and abdomen</td>
<td>02</td>
</tr>
<tr>
<td>4</td>
<td>Axilla and tail base</td>
<td>01</td>
</tr>
<tr>
<td>5</td>
<td>Back</td>
<td>03</td>
</tr>
<tr>
<td>6</td>
<td>Back, belly and hind limbs</td>
<td>02</td>
</tr>
<tr>
<td>7</td>
<td>Axilla, belly and perinium</td>
<td>02</td>
</tr>
<tr>
<td>8</td>
<td>Back and belly</td>
<td>01</td>
</tr>
<tr>
<td>9</td>
<td>Back and axilla</td>
<td>02</td>
</tr>
<tr>
<td>10</td>
<td>Anus and hind limbs</td>
<td>01</td>
</tr>
<tr>
<td>11</td>
<td>Hind limbs</td>
<td>08</td>
</tr>
<tr>
<td>12</td>
<td>Thigh and tail</td>
<td>06</td>
</tr>
<tr>
<td>13</td>
<td>Hip and hind limbs</td>
<td>01</td>
</tr>
<tr>
<td>14</td>
<td>Hind limbs (pre-femoral, stifle and flank)</td>
<td>02</td>
</tr>
<tr>
<td>15</td>
<td>Scrotum and thigh</td>
<td>01</td>
</tr>
<tr>
<td>16</td>
<td>Thigh, axilla and tail</td>
<td>01</td>
</tr>
</tbody>
</table>
Gross regional specificity of infection was categorized as anterior regional affection, posterior and antero-posterior or cranio-caudal specificity. Anterior regional affection (CCWT, Figure-1,2,12) or specificity (all together, n=850), involving eye(s), eyelid(s) or peri-orbital region (n=45, 2.74%) only was categorized as orbital or peri-orbital papillomatosis (Figure-5,6), involvement of facial region (n=8, 0.48%) only, categorized as facial papillomatosis (Figure-4), lesions raised on bovine fore limbs (Figure-9) either bilateral or unilateral, left or right or both, categorized as fore limb(s) papillomatosis (n = 43, 2.62%). Posterior regional specificity of infection (n=326) was categorized to be the hind limb warts (Figure-10: mild form, -11: moderate to severe) or hind limb papillomatosis (n=41, 2.50%) with the involvement of hind limb or limbs only, genital or para-genital papillomatosis (n = 47, 2.86%) (Figure-15-A, E, F, G & H), with the involvement of external genitals, vulva of female bovines, and either scrotum or prepuce or both of male bovines or lesions arising on peri-genital skin respectively categorized as paragenital papillomatosis, anal or peri-anal papillomatosis (n=27, 1.64%) (Figure-15-B, C & D) involving anal skin, sphincter or skin at the perineum, axillary papillomatosis (n=16, 0.97%) involving either unilateral or bilateral involvement of axilla (Figure-14) etc.

Gross regional distribution of warts like gross anterior regional specificity of infection, posterior regional or caudal specificity of infection and antero-posterior or cranio-caudal affection either in clinics (Table-99), field (Table-100) or farm (Table-101) reflects high incidence of crania followed by posterior and cranio-caudal affection or warts distribution. Warts distribution at diversified anatomical sites in field (Table-102-104), clinics (Table-105-107) and farm (Table-108-110) were also recorded properly and observations had been presented in tabular form.

Gross anatomical or regional affection of warts or its distribution recorded in all modes of survey in cattle has been represented as a gist in the table (Table-111) presented.
Table-111: Summarized data showing gross regional distribution of cattle cutaneous wart including cattle teat wart in all four different modes of survey

<table>
<thead>
<tr>
<th>SI No</th>
<th>Type of survey</th>
<th>Anterior regional distribution</th>
<th>Posterior regional distribution</th>
<th>Anteroposter regional distribution</th>
<th>Whole body papillomatosis</th>
<th>Total wart case recorded</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Random Field survey</td>
<td>508</td>
<td>244</td>
<td>112</td>
<td>28</td>
<td>892</td>
</tr>
<tr>
<td>2</td>
<td>Veterinary Institutional survey</td>
<td>220</td>
<td>182</td>
<td>65</td>
<td>30</td>
<td>497</td>
</tr>
<tr>
<td>3</td>
<td>Organized farm survey</td>
<td>122</td>
<td>62</td>
<td>19</td>
<td>05</td>
<td>208</td>
</tr>
<tr>
<td>4</td>
<td>Teat papilloma survey in organized farm</td>
<td>-</td>
<td>43</td>
<td>-</td>
<td>-</td>
<td>43</td>
</tr>
<tr>
<td>TOTAL</td>
<td></td>
<td>850</td>
<td>531</td>
<td>196</td>
<td>63</td>
<td>1640</td>
</tr>
</tbody>
</table>

4.2.5 Bubaline or buffalo cutaneous papillomatosis (BUCP)

4.2.5.1 Bubaline cutaneous warts (BCWT)

The clinical feature or gross pathological observations on cutaneous warts of infected buffaloes was presented in Table (Table 1-15) along with CCWTs, and a gross macroscopic view of representative cases of BCWT was presented in Figure-23-26, showing both localized (regional specificity and or site specific lesions) and only very few generalized distribution (diffused dissemination of lesions) of warts, based on field survey and institutional survey (survey in Veterinary Clinics) both. Although generalised form of cattle cutaneous warts (CCWTs) or whole body papillomatosis was observed in sixty three (n = 63) number of tender aged and or sub adult juvenile cattle, only very few buffalo had suffered from whole body papillomatosis. Grossly the warts in buffaloes appeared as solitary lesions in scattered form and in no case BCWT lesions appeared as confluent and coalesing lesions. Most of the warts in buffaloes appeared as epidermal proliferations that had keratotic surface resembling a cauliflower known to be verruca vulgaris. Grossly two different types of growth patterns were seen in affected buffaloes. There were mostly hard horny cauliflower-like warts with papillary outgrowths or dome shaped warts with smooth undulating outer layer. White or whitish grey cauliflower like warts were most common type of warts in buffaloes; of course various other forms, colours, shapes and dimensions were noted. The lesions were more especially around the eyes, ears, neck, limbs, anal and peri-genital region, udder and teats.

4.2.5.2 Incidence of BCWT

During entire survey period a total fifty nine cases of BCWT was recorded. Division wise survey of BCWT in both field, farms and clinics were shown in table(Table-74-79). In field survey, 12 numbers of BCWT was recorded in Burdwan division, 11 numbers in Presidency Division and only 4 numbers in Jalpaiguri division was recorded. In institutional survey, i.e. survey in veterinary clinics, 10 numbers in Burdwan Division, 3 numbers in Presidency Division and 3 numbers in Jalpaiguri Division were recorded.
4.2.5.3 Sex wise distribution or affection of bubaline cutaneous wart

Gender base affection if any in bubaline cutaneous papillomatosis was studied and summarized data has been annexed in table (Table-109), which revealed higher prevalence in female (115/128) sex as compared to male (13/128).

**Table-112: Sex wise distribution of Bubaline cutaneous wart recorded in WB**

<table>
<thead>
<tr>
<th>Sl. No</th>
<th>CWT in Male Buffalo</th>
<th>CWT &amp; TP in Female Buffalo</th>
<th>Total Buffalo Wart cases</th>
<th>Sex wise wart incidence Percentage (M/F %)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Field Survey</td>
<td>4</td>
<td>43</td>
<td>47</td>
<td>M-8.51%; F-91.48%</td>
</tr>
<tr>
<td>Farm Survey</td>
<td>3</td>
<td>61</td>
<td>64</td>
<td>M-4.68%; F-95.31%</td>
</tr>
<tr>
<td>Clinics Survey</td>
<td>6</td>
<td>11</td>
<td>17</td>
<td>M-35.29%; F-64.70%</td>
</tr>
<tr>
<td>Total</td>
<td>13</td>
<td>115</td>
<td>128</td>
<td>M-10.15%; F-89.84%</td>
</tr>
</tbody>
</table>

4.2.5.3 Teat papillomatosis in both cattle and buffaloes (TP)

Division wise recorded incidence of bovine and bubaline teat papillomatosis showing breed wise clinical affection during the field survey period from 2009-2012 in WB has been presented in tables (Table-110-112).

**Table -113: Division wise recorded incidence of bovine and bubaline Teat papillomatosis (cattle and buffalo teat wart cases showing breed wise affection) during the field survey period 2009-2012 in Jalpaiguri Division in West Bengal**

<table>
<thead>
<tr>
<th>Sl No</th>
<th>Name of the District</th>
<th>District wise recorded CTP Cases</th>
<th>No of ND &amp; Indigenous Cattle suffered from TP</th>
<th>No of CBJ cattle suffered from TP</th>
<th>No of HLX cattle suffered from TP</th>
<th>Total bubaline Teat Wart cases</th>
<th>No of Murrah buffalo suffered from TP</th>
<th>No of ND buffalo suffered from TP</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Darjeeling (DJG)</td>
<td>05</td>
<td>03</td>
<td>02</td>
<td>NIL</td>
<td>NIL</td>
<td>NIL</td>
<td>NIL</td>
</tr>
<tr>
<td>2</td>
<td>Jalpaiguri (JPG)</td>
<td>05</td>
<td>02</td>
<td>02</td>
<td>01</td>
<td>NIL</td>
<td>NIL</td>
<td>NIL</td>
</tr>
<tr>
<td>3</td>
<td>Maldaha (MDH)</td>
<td>11</td>
<td>05</td>
<td>04</td>
<td>02</td>
<td>02</td>
<td>02</td>
<td>NIL</td>
</tr>
<tr>
<td>4</td>
<td>Coochbehar (CBR)</td>
<td>NIL</td>
<td>NIL</td>
<td>NIL</td>
<td>NIL</td>
<td>NIL</td>
<td>NIL</td>
<td>NIL</td>
</tr>
<tr>
<td>5</td>
<td>Uttar Dinajpur (UDP)</td>
<td>NIL</td>
<td>NIL</td>
<td>NIL</td>
<td>NIL</td>
<td>NIL</td>
<td>NIL</td>
<td>NIL</td>
</tr>
<tr>
<td>6</td>
<td>Dakshin Dinajpur (DDP)</td>
<td>NIL</td>
<td>NIL</td>
<td>NIL</td>
<td>NIL</td>
<td>NIL</td>
<td>NIL</td>
<td>NIL</td>
</tr>
<tr>
<td>Grand Total</td>
<td>21</td>
<td>10</td>
<td>08</td>
<td>03</td>
<td>02</td>
<td>02</td>
<td>NIL</td>
<td>NIL</td>
</tr>
</tbody>
</table>

In JPG Division (Table-110) among twenty one cases of CTP, ten cases was recorded in ND cows, eight cases in CBJ and three cases in HLX cow and BTP cases (n = 02) was recorded only in Murrah buffaloes.
Table -114: Division wise recorded incidence or prevalence of bovine and bubaline Teat papillomatosis (cattle and buffalo teat wart cases showing breed wise affection) during the Field survey period 2009-2012 in Burdwan Division of West Bengal

<table>
<thead>
<tr>
<th>Sl No</th>
<th>Name of the District</th>
<th>District wise recorded CTP Cases</th>
<th>No of ND &amp; Indigenous Cattle suffered from TP</th>
<th>No of CBJ cattle suffered from TP</th>
<th>No of HLX cattle suffered from TP</th>
<th>Total bubaline Teat Wart cases</th>
<th>No of Murrah buffalo suffered from TP</th>
<th>No of ND buffalo suffered from TP</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Bankura (BKU)</td>
<td>01</td>
<td>NIL</td>
<td>01</td>
<td>NIL</td>
<td>03</td>
<td>02</td>
<td>01</td>
</tr>
<tr>
<td>2</td>
<td>Birbhum (BBM)</td>
<td>05</td>
<td>01</td>
<td>04</td>
<td>NIL</td>
<td>04</td>
<td>03</td>
<td>01</td>
</tr>
<tr>
<td>3</td>
<td>Burdwan (BDN)</td>
<td>03</td>
<td>02</td>
<td>NIL</td>
<td>01</td>
<td>NIL</td>
<td>NIL</td>
<td>NIL</td>
</tr>
<tr>
<td>4</td>
<td>Purnia (PRL)</td>
<td>02</td>
<td>01</td>
<td>01</td>
<td>NIL</td>
<td>NIL</td>
<td>NIL</td>
<td>NIL</td>
</tr>
<tr>
<td>5</td>
<td>West Midnapur (WMP)</td>
<td>03</td>
<td>02</td>
<td>01</td>
<td>NIL</td>
<td>NIL</td>
<td>NIL</td>
<td>NIL</td>
</tr>
<tr>
<td>6</td>
<td>East Midnapur (EMP)</td>
<td>10</td>
<td>NIL</td>
<td>10</td>
<td>NIL</td>
<td>NIL</td>
<td>NIL</td>
<td>NIL</td>
</tr>
<tr>
<td></td>
<td>Grand Total</td>
<td>24</td>
<td>06</td>
<td>17</td>
<td>01</td>
<td>07</td>
<td>05</td>
<td>02</td>
</tr>
</tbody>
</table>

Table-115: Division wise recorded incidence or prevalence of bovine and bubaline Teat papillomatosis (cattle and buffalo teat wart cases showing breed wise affection) during the survey period 2009-2012 in Presidency Division in West Bengal

<table>
<thead>
<tr>
<th>Sl No</th>
<th>Name of the District</th>
<th>District wise recorded CTP Cases</th>
<th>No of ND &amp; Indigenous Cattle suffered from TP</th>
<th>No of CBJ cattle suffered from TP</th>
<th>No of HLX cattle suffered from TP</th>
<th>Total bubaline Teat Wart cases</th>
<th>No of Murrah buffalo suffered from TP</th>
<th>No of ND buffalo suffered from TP</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Howrah (HWH)</td>
<td>02</td>
<td>01</td>
<td>01</td>
<td>NIL</td>
<td>01</td>
<td>01</td>
<td>NIL</td>
</tr>
<tr>
<td>2</td>
<td>Nadia (NDA)</td>
<td>15</td>
<td>03</td>
<td>10</td>
<td>02</td>
<td>01</td>
<td>01</td>
<td>NIL</td>
</tr>
<tr>
<td>3</td>
<td>North 24 Pargana (NTP)</td>
<td>03</td>
<td>NIL</td>
<td>03</td>
<td>NIL</td>
<td>04</td>
<td>04</td>
<td>NIL</td>
</tr>
<tr>
<td>4</td>
<td>South 24 Pargana (STP)</td>
<td>02</td>
<td>01</td>
<td>01</td>
<td>NIL</td>
<td>NIL</td>
<td>NIL</td>
<td>NIL</td>
</tr>
<tr>
<td>5</td>
<td>Hooghly (HLY)</td>
<td>04</td>
<td>NIL</td>
<td>04</td>
<td>NIL</td>
<td>NIL</td>
<td>NIL</td>
<td>NIL</td>
</tr>
<tr>
<td>6</td>
<td>Murshidabad (MSD)</td>
<td>07</td>
<td>01</td>
<td>06</td>
<td>NIL</td>
<td>NIL</td>
<td>NIL</td>
<td>NIL</td>
</tr>
<tr>
<td>7</td>
<td>Kolkata (KKT)</td>
<td>05</td>
<td>01</td>
<td>03</td>
<td>01</td>
<td>07</td>
<td>03</td>
<td>04</td>
</tr>
<tr>
<td></td>
<td>Grand Total</td>
<td>38</td>
<td>07</td>
<td>28</td>
<td>03</td>
<td>13</td>
<td>09</td>
<td>04</td>
</tr>
</tbody>
</table>

In BDN Division (Table-111) among twenty four cases of CTP, six cases was recorded in ND cows, seventeen cases in CBJ and one case in HLX cow and among seven BTP cases (n = 07), five cases were recorded in Murrah buffalo breed and two in ND buffaloes.

In PDN Division(Table-112) among thirty eight cases of CTP, seven cases were recorded in ND cows, twenty eight cases in CBJ and three cases in HLX cow and among
thirteen BTP cases (n = 13), nine cases were recorded in Murrah buffalo breed and four in ND buffaloes.

Teat papillomatosis (TP) being regarded as posterior regional specificity of infection affecting the skin of the mammary gland both in cattle and buffalo was almost unknown entity in West Bengal and during epidemiological survey most surprisingly typical wart like lesions either on teats or udder or both cattle and buffalo was recorded. Cattle teat papilloma (CTP, n=207) and buffalo teat papilloma, (BTP, n=70) was the outcome of the said survey and the lesions were categorized to be frond type (slightly raised diffuse growth with almost smooth outer surface attached with a broad base to the teat skin), rice grain type (solitary and few thin elongated single protruding mass attached with a narrow base), flat type (discrete, low, flat and circular in appearance) and even cauliflower like firm tumours were recorded. The lesions were restricted to hairless portion of the teats affecting single or multiple irrespective of front or rear teats (BTP, Figure-26, CTP, Figure-20&21) or affecting all four teats (BTP, Figure-26,E), and in few cases involvement of both teats and udder (mammary gland) of the affected animals were noticed (CTP, Figure-22). According to the number, size, shape and dimension of teat lesions and degree of affection, clinically teat papillomatosis were categorized as mild, moderate and severe. Gross morphological examination and or visual assessment were made on the developed lesions as presented in tables (Table 1-72).

4.2.6.1: Hematological studies

Table -116: Haemogram of natural cases of bovine and bubaline papillomatosis (Mean ± SE)

<table>
<thead>
<tr>
<th>Category of animal</th>
<th>Animals</th>
<th>No of animals</th>
<th>TEC (X 10⁶)</th>
<th>Hb %</th>
<th>PCV (%)</th>
<th>TLC (X10³)</th>
<th>N %</th>
<th>L %</th>
<th>M %</th>
<th>E %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cattle Control</td>
<td>22</td>
<td>7.76 ±1.27</td>
<td>12.52 ±0.70</td>
<td>31.52 ±0.28</td>
<td>7.16 ±0.46</td>
<td>36.06 ±1.06</td>
<td>61.25 ±0.53</td>
<td>2.15 ±0.33</td>
<td>0.54 ±0.2</td>
<td></td>
</tr>
<tr>
<td>Infected (CCWT)</td>
<td>22</td>
<td>7.26 ±0.24</td>
<td>12.06 ±0.21</td>
<td>30.25 ±1.43</td>
<td>7.67 ±0.23</td>
<td>34.32 ±0.77</td>
<td>63.55 ±0.78</td>
<td>1.74 ±0.54</td>
<td>0.39 ±0.12</td>
<td></td>
</tr>
<tr>
<td>Buffalo Control</td>
<td>32</td>
<td>7.95 ±0.09</td>
<td>13.17 ±0.70</td>
<td>31.32 ±0.28</td>
<td>7.54 ±0.46</td>
<td>35.65 ±0.86</td>
<td>62.25 ±0.53</td>
<td>1.41 ±0.33</td>
<td>0.69 ±0.23</td>
<td></td>
</tr>
<tr>
<td>Infected (BCWT)</td>
<td>32</td>
<td>7.10 ±0.15</td>
<td>11.77 ±0.18</td>
<td>28.14 ±0.37</td>
<td>10.71 ±0.32</td>
<td>32.44 ±0.66</td>
<td>65.21 ±0.74</td>
<td>1.12 ±0.41</td>
<td>1.23 ±0.17</td>
<td></td>
</tr>
</tbody>
</table>

Mean value with different superscripts differs significantly (P<0.05)

4.2.6.2: Biochemical studies

Table -117: Selected Biochemical indicators in diseased and healthy buffalo calves (Mean ± SE)

<table>
<thead>
<tr>
<th>Category of animal</th>
<th>Animals</th>
<th>No of animals</th>
<th>Blood Glucose mg%</th>
<th>BUN mg%</th>
<th>Serum Cholesterol mg%</th>
<th>Total serum Protein gm%</th>
<th>Albumin %</th>
<th>Globulin %</th>
<th>SGOT IU/L</th>
<th>SGPT IU/L</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cattle Control</td>
<td>22</td>
<td>46.16 ±0.28</td>
<td>7.16 ±0.24</td>
<td>124.64 ±12.47</td>
<td>7.16 ±0.09</td>
<td>2.06 ±0.09</td>
<td>4.56 ±0.09</td>
<td>31.66 ±0.09</td>
<td>35.24 ±0.09</td>
<td></td>
</tr>
</tbody>
</table>
### 4.2.7.1. Gross pathology

Gross: The warts were of varying sizes, rough, irregular in shape, cauliflower like solid masses raised or elevated and attached by narrow or broad base. Individual papillomas or cluster of papillomas were recorded during standard clinical examination. Macroscopically the wart lesions had high density formation of irregular shape, roughly spherical and the lesions were wrinkled, cornified and devoid of hairs.

Regardless of size, shape, dimension and contour, lesions were low, flat and circular or highly elevated lumps characteristically circumscribed or delineated by a discrete line of raised hyper-keratotic skin. Lesions were completely alopecic and surfaces were mostly dry and contained many fine fissures.

On transverse section the warts were seen to consist of homogeneous, grey white, glossy, connective tissue covered by hyperplastic epidermis.

### 4.2.7.2. Histopathology

A total of one hundred wartbiopsies (excisional biopsy, skin punched biopsys and incised biopsy material) from naturally infected and or spontaneous cases of cutaneous papillomatosis (CP), comprising of eighty (n = 80) number of infected cattle and twenty number(n = 20) of infected buffaloes were studied histopathologically and the CWTs were histologically found to have different growth patterns. Cattle cutaneous warts although microscopically showed varying pathological changes, majority of these revealed characteristic histopathological features of fibro-papillomatosis and least number of cases revealed true papillomatosis. Histologically mild cornification, acanthosis, fibrous tissue islands between proliferated keratinocytes with variable length, elongated rete peges penetrating in dermal fibrous tissue (Figure-27, C) or marked hyperkeratosis and acanthosis in stratum spinosum with koilocytes (Figure-, 27, D) or hyperplasia with marked acanthosis with koilocytes were the usual findings in CTP cases revealing exophytic fibopapillomatous conditions as confirmed histologically. Likewise in buffalo or bubaline cutaneous warts and teat warts, the tumors were diagnosed mostly as exophytic fibropapilloma. Histologically in BTP (BTWT) cases, finger-like papillae, hyperkeratinisation, acanthosis, hyperplastic proliferation of rete peges revealing exophytic papilloma (Figure-40, B) and occasionally fibrocellular changes along with neovascularization and capillary engorgement coupled with neutrophilic infiltration revealing fibropapilloma was also noticed.
Microscopic changes typical of exophytic fibropapillomas were observed in almost all the cases of cattle cutaneous papillomas, revealing epidermal hyperplasia, acanthosis and moderate to extensive cornification (hyperkeratosis) along with elongated growth of papillary projections extending into dermis. Elongated rete pegs and in between engorgement of blood vessels and neo-vascularizations were also evident in few cases (Figure-33, C). The dermis was also hyperplastic due to marked proliferation of connective tissue (Figure-28, C). Exceptionally in one case of CCWT typical features simulating endophytic papilloma was diagnosed (Figure-33, A). However, in case of udder and teat papillomas both fibropapillomas (epidermal hyperplasia along with fibromatous proliferation) and typical papillomas characterized by epidermal hyperplasia were observed.

In buffaloes, histologically moderate to extensive cornification (Figure-40, A) was seen with varying degree of parakeratosis (nuclear remnants), finger like outgrowths (papillae) and dermal fibrous connective tissue core (Figure-40, A &C) were seen confirming BCWT as exophytic fibropapilloma. The granular cell layer had prominent basophilic keratohyaline granules (Figure-40, A). The stratum spinosum revealed koilocytes (vacuolated epidermocytes), degenerating cells and few mitotic figures (Figure-41, D). The basal cell layer in few cases were also found hyperplastic with few mitoses. In the hypodermis, there were engorged capillaries with occasional infiltration of mononuclear cells and neutrophils(Figure-41, C). Extensive fibrocellular proliferative changes were seen in the hypodermis. These cases were diagnosed as fibropapilloma.

Histopathological investigation of CCWT samples revealed a prominent ortho or parakeratotic hyperkeratosis (Figure-29, C, Figure-31, B). The dermal papillae were elongated with irregular rete ridge formation covered by acanthotic epidermis (Figure-29, B). In the prickle cell layer, single cells or small groups of cells with vacuolated cytoplasm were seen. Others showed variable degrees of ballooning degeneration (koilocytes) with presence of abundant clumped, pleomorphic keratohyaline granules. In the dermal layer the proliferating cells were large, plumb fibroblasts arranged in haphazard whorls and fascicles. In others the connective tissue was mature, hyalinised and poor in cell population. In some cases epidermis was ulcerated and neutrophilic margination was seen in the dilated and congested or engorged capillaries with in the dermis. Neutrophilic exocytosis into the dermis and epidermis were seen in cases with secondary infection. In most other cases the epidermal proliferation was minimal and characterized as mild acanthosis and accentuation of rete pegs. Occasionally melanin granules that were free within the sub epidermal and within dermal melanophages were seen.

Histologically in BUCP cases, moderate to extensive cornification and varying degree of parakeratosis were observed in stratum cornium. Myxomatous changes in the epidermal
fibrous tissue and pseudo cornification was evident in mild form of BCWT cases (Figure-42, D). Very few to multiple fingers like papillae with dermal fibrous connective core were noticed in majority of the cases. Fibroplasia along with presence of vacuolated space in dermis and extensive fibrous tissue proliferation was noticed in many cases (Figure-41, A) Epithelial hyperplasia was evident in good many cases and was characterized by mild, moderate or marked irregular hyperplasia of the stratifying epithelium. There was increase in number of keratinocytes in both the stratum spinosum and stratum granulosum of the epidermis. Hyperplastic stratum spinosum with presence of many koilocytes and islands of dermal connective tissue surrounded by hyperplastic epidermal cell layers. Koilocytes and epithelial cells with marginated nuclear chromatin were evident.

The epidermis in great majority of the CWT cases showed signs of acanthosis and hyperkeratosis (Figure-29, B & D; Figure-31, A & B; Figure-37, D; Figure-39, A). Granular cell layer had prominent, basophilic keratohyaline granules in the cell cytoplasm. Moderate to extensive acanthosis (thickening of the stratum spinosum) with prominent irregular rete pegging, projecting deep into the dermis were seen. Koilocytosis and or numerous vacuolated epidermocytes with condensed hyperchromatic nuclei were seen in the top layer of stratum spinosum and granulosum too (Figure-31 & 32, B & C). Engorged blood capillaries and eosinophilic deposits of keratin were seen at the tips of the papillae. Intense fibrocellular proliferative changes were seen in the epidermis with presence of fibroblasts and fibrocytes. These cases were diagnosed as exophytic fibropapilloma. Compared to cattle with abundance of koilocytes (Figure 31, A, B & C; 32, B & C, 34, B; 35, B & C; 36, B & D) buffalo warts showed only few koilocytes in the upper layer of stratum spinosum.

Diagnosis of warts although could usually be done based on clinical examination but were suggested by the histological appearances of acanthotic epidermis with papillomatosis, hyperkeratosis and parakeratosis, with elongated rete ridges often curving towards the centre of the wart. Dermal capillary vessels in few cases were found prominent and thrombosed. There were large keratinocytes with eccentric pyknotic nuclei surrounded by a perinuclear halo. Flat warts had less acanthosis and hyperkeratosis and did not have parakeratosis or papillomatosis.

In buffalo warts, on H&E stained sections, the tumours were seen to consist of homogeneous, smooth connective tissue covered by hyperplastic epithelium with acanthosis and hyperkeratosis. The stratum spinosum was hyperplastic and few koilocytes were present and scarcely arranged in small groups. These cells were very much characteristic with the common features like cells were large, mildly eosinophilic and vacuolated cytoplasm, and few contained small distorted nuclei with dense chromatin. Nuclei in the majority of the epidermocytes were vesicular with fine chromatin and apparent nucleoli. Some cells revealed histologic signs of apoptosis. The connective tissue of the tumors consisted of fibrocytes of
different sizes and shapes and the tumourstroma was composed of large stellate cells with extensive cytoplasm and plump nuclei. There was mild infiltration of the connective tissue by lymphocytes in the basal zone of the epidermis.

Control: Revealed normal histological features. Histopathological findings of representative cases of both BOCP and BUCP including CTP and BTP have been stated below.

1. Ear lesion, bovine origin (JYXGIR MC) : (CCWT-1: RKM-1: STP-109): Histological section of cattle cutaneous wart (ear wart) showed surface epidermal hyperplasia where the lesions were composed of hyperplastic epidermis, with irregular papillary projections into the dermis supported on cores of dermal connective tissue. Microscopic examination showed hyper-keratotic areas on the surface of the epidermis and hyperplasia in the keratinocytes in the stratum spinosum.

2. Para-genital lesion, bovine origin (CBJCow): (CCWT-4: STP-20): Hyperplasia of the epidermis with acanthosis (contained foci of vacuolated cells) and hyperkeratosis (thickening of the horny layer) was evident. Many koilocytes were disseminated in the epidermis. Besides epidermal acanthosis, hydropic changes were observed in the keratinocytes of the epidermis.

3. Peri-orbital lesion, bovine origin (JXTH, FC) : (CCWT-7: NDA-301): Histological section of cattle cutaneous wart (eye lid wart) showed minimal surface epidermal hyperplasia with slight acanthosis and accentuation of rete pegs.

4. Axillary lesion, bovine origin (GHF): (CCWT-8: NDA-247): It showed thickened epithelium, rested on proliferative connective tissue. Hyper-keratinization along with hyperplasia of stratum spinosum in epidermis. Marked vacuolations of the cells of the stratum spinosum and stratum granulosum was evident.

5. Abdominal lesion, bovine origin (X FC): (CCWT-9: HWH-32): The tumour mass was largely composed of connective tissue, covered by a hyperplastic epidermis, thickened stratum spinosum and hyper keratosis. The stratum spinosum was hyperplastic and many vacuolating epidermal cells arranged in small groups or scattered in the field seen.

6. Squat type lesion behind the hump, bovine origin (CI HF): (CCWT-10: HWH-37): Histologically the tumour tissue was composed of hyperplastic epidermis supported by thin inconspicuous dermal stalks. Rete-formation of epidermal tissue which was encircled by fibrous connective tissue. Mild to moderate degree of acanthosis was seen with rete pegs projecting deep into the dermis with some lateral interconnections. Moderate fibrocellular changes were noticed in the hypodermis. Case was diagnosed as fibropapilloma (endophytic fibropapilloma). (Figure-33,A).
7. Dome shaped lesion from shoulder region, bovine origin (CBJ HF): (CCWT-11: HWH-05): Histological examination revealed irregular hyperplastic epidermis with rete ridges formation. Epidermis presented hyper keratosis. Hyper chromatic nuclei were visible in the basal layer. Some koilocytes with shrunken and irregular nuclei surrounded by clear spaces were evident.

8. Dome shaped lesion from ventral abdomen, (CBJ HF), bovine origin: (CCWT-13: KKT-37): Microscopically the tumours consisted of irregular fronds of squamous epithelium covered with a thick dense layer of keratin. Some of the fronds had a core of loose vascular connective tissue. Cells about the periphery of the basal part of the tumour were small cuboidal and those in the projecting fronds were large polyhedral. The total features as depicted in the histo-micrograph was suggestive of papilloma.

9. Squat type lesion from linea ulba, bovine origin (HLX Cow): (CCWT-20: BBM-8): Microscopically the tumour / wart section revealed multiple papillary projections of fibrovascular connective tissue covered by hyperplastic stratified squamous epithelium. Foci of vacuolated cells in the acanthotic stratum malphigii. Stratum spinosum cells were swollen and their cytoplasm contained basophilic granules of various sizes. There was capillary dilatation, hyperemia in the propria. Based on histopathological findings the case was described as fibropapilloma.

10. Facial lesion, bovine origin (NDMC): (CCWT-24: WMP-05): Microscopic examination of the stained wart tissue section of the facial region, revealed fibrous tissue cells running in various directions and crisscrossing each other. The neoplastic tissue cells appeared thin, elongated with spindle shaped nucleus and homogeneous cytoplasm. Histomicrograph thus was suggestive of fibroma.

11. Tag type lesion from inguinal region, bovine origin (ND BK): (CCWT-28: EMP-06): Microscopic examination of the stained sections of the wart tissue showed hyperkeratotic areas on the surface of the epidermis, hyperplasia in the keratinocytes in the stratum spinosum, vacuolic and balloon like degeneration in the cells and a granular appearance in the keratinocytes. Epidermal acanthosis and hydropic changes were seen in the keratinocytes of the epidermis.

12. Nodular squat type lesion from cheek, bovine origin (ND HF): (CCWT-29: EMP-08): Microscopic examination of the stained sections of the wart tissue revealed fibroblastic proliferation in the papillary layer of dermis replacing normal adenexa of the corium and leukocytic infiltration suggesting it to be a case of fibropapilloma.
13. Flattened non pedunculated lesion from lumbar: bovine origin (CBJ HF): (CCWT-34: BDN-12): Microscopic examination of the stained sections of the cauliflower like wart tissue revealed epidermal proliferation with a keratotic surface.

14. Nodular lesion from hind limb: bovine origin (HLX FC): (CCWT-45: MSD-06): Microscopic examination of the stained sections of the papulo-nodular wart tissue revealed abundance of irregularly lined fibroblast and fibrocytes.Collagen fibers were observed in the connective tissue.

15. Club shaped lesion from muzzle: bovine origin (CBJ Cow): (CCWT-48: MDH-07): Microscopic examination of the stained sections of the wart tissue revealed epidermal hyperplasia, acanthosis and hyperkeratosis along with elongated growth of papillary projections extending into dermis. The dermal layer was also hyperplastic owing to marked proliferation of connective tissue. Histomicrograph and or the pathological changes were suggestive of fibropapilloma.

16. Sessile type lesion from dewlap: bovine origin (CBJ FC): (CCWT-50: DJG-04): The microscopic sections revealed whorls and interlacing bundles of fibroblasts and collagen fibres. The neoplastic cells were stellate in shape and had elongated nucleus and multiple nucleoli. No mitotic figure was observed. Histopathological changes were suggestive of typical fibroma.

17. Cauliflower like lesion from back: bovine origin (G HF): (CCWT-52: PRL-16): Cross section of back lesion: Histopathology revealed multiple papillary projections of fibrovascular connective tissue covered by hyperplastic stratified squamous epithelium. Microscopic changes were suggestive of Fibropapilloma.

18. Cauliflower like lesion on teat: bovine origin (CBJ cow): (CTP-54: JPG-3): Teat wart biopsy: Microscopic examination of the stained sections of the teat wart tissue revealed epidermal hyperplasia, acanthosis and down growth of rete ridges. Fibromatous proliferation was not seen at all. Histopathological changes of teat wart were suggestive of papilloma.

19. Cauliflower like lesion on hump, bovine origin (CCWT: CBJ HF:HWH-05) Microscopic examination of the stained section of the hump based wart tissue revealed hyperkeratosis with parakeratosis and elongated rete ridges appearing to point towards the centre. Foci of vacuolated cells are found in the stratum malpighi. The basal layer revealed liquefactive degeneration, irregular acanthosis and prominent elongation of rete peges.

20. Cauliflower like wart on ear pina (Buffalo origin: B KU-03: BCWT-1): Ear wart biopsy: Histologically acanthosis, elongated rete pegs and hyperplastic dermal
fibrous tissue along with mononuclear infiltrations. Histopathological changes were suggestive of fibropapilloma.


22. Cauliflower like wart on back (Buffalo origin: NTP-10: BCWT-3): Back wart biopsy: Cross section of exophytic dome shaped wart histologically revealed fibropapilloma with acanthosis, hyperkeratosis and down growth of rete ridges. Fibrocytes and immature fibroblasts of different sizes were observed in the dermal connective tissue. Blood capillaries were engorged with occasional infiltration of mononuclear cells (Fig-41, C). The case was diagnosed as fibropapilloma.

23. Dome shaped wart on peri-genital region (Buffalo origin: MDH-17: BCWT-4): Paragenital wart biopsy: Cross section of exophytic dome shaped wart was found to be composed of mass of connective tissue underlying a thick keratin layer. There was moderate hyper keratosis and marked parakeratosis with basket wave appearance. Varying degree of acanthosis was seen and the whole epidermal layer was seen hyperplastic. A few koilocytes was also noticed at the upper cell layers. Numerous keratohyaline granules were seen in the cells of stratum granulosum.

24. Cauliflower like wart on eyelid (Buffalo origin: BDN-39: BCWT-5): Eyelid wart biopsy: Microscopic examination of the H&E stained section of a cauliflower like wart tissue revealed mild keratinization on the surface and occasional with a few processes. Epidermal thinning was observed with a few small sized thin irregular rete pegs projecting into the dermis along with few patchy areas of proliferative epidermal cells with hyper chromatic nuclei. Scattered koilocytes also seen and in the hypodermis, mature fibrous connective tissue was seen in whirling pattern with a few immature fibroblasts. Occasional engorged blood capillaries with mononuclear cell infiltration were also observed. The case was histologically diagnosed as papilloma occult/fibroblastic type.

26. Cauliflower like wart on limb (Buffalo origin: NTP-53: BCWT-7): Limb wart biopsy. Microscopic examination of the H&E stained sections of the wart tissue revealed groups of proliferating fibroblasts embedded in a compact mesh of collagen fibres. The epidermis showed signs of acanthosis and occasional groups of keratinocytes containing scattered melanin granules in the stratum spinosum and variable amount of keratohyaline granules in the stratum granulosum.

27. Cauliflower like wart on neck (Buffalo origin: BDN-29: BCWT-8): Buffalo origin Neck wart biopsy: H&E stained section of CWT revealed acanthosis, hyperkeratosis and down growth of rete pegs. Hyperplasia of the basal cells and presence of prominent keratohyaline granules and vesicular nuclei was evident. Some degenerated cells were also found.

28. Frond type teat wart: Buffalo origin: BKU-23, BTP-1: Teat wart biopsy: H&E stained section of TP microscopically showed finger like projection with cornified layer, hyperplastic stratum spinosum and connective tissue core. The TP was histologically diagnosed to be a fibropapilloma.

29. Diffuse frond type wart on udder: Buffalo origin: NTP-2, BTP-2: Udder wart biopsy: H&E stained section of CWT histologically revealed thin layer of epidermis and prominent collagenous tissue along with pseudo cornification. The CWT hence histologically diagnosed to be an occult type papilloma.

30. Rice grain type teat wart: Buffalo origin: BKU-23, BTP-3: Teat wart biopsy: H&E stained section of CWT of a she buffalo revealed fibrocellular proliferative changes along with engorgement and infiltration of mononuclear cells. The case was diagnosed to be a buffalo fibropapilloma.

31. Inter scapular wart biopsy: Buffalo origin: MDH-3: BCWT-9: Microscopically dermal layer revealed large, proliferating, plump fibroblasts arranged in haphazard whorls and fascicles. The microscopic features confirmed the case as fibropapilloma.

32. Wart biopsy from thorax: Buffalo origin: NTP-14: BCWT-10: Microscopic examination revealed marked ortho-keratotic hyper keratosis. The dermal papillae were elongated with irregular rete ridges formation covered by acanthotic epidermis. In the prickle cell layer, single cells or small groups of cells with vacuolated cytoplasm were seen.

33. H&E stained section of CWT histologically revealed finger like projections covered by hyper keratinized layers and hyperplasia of stratum spinosum. In connective tissue stroma, connective tissue proliferation along with dilation of blood vessels was seen.
34. H&E stained section of CWT (Gir HF limb wart): Photomicrograph of CWT histologically revealed hyperplasia of epidermis, vacuolating cells in some of the keratinized area near the border of the finger like projections. Engorgement of blood capillaries with huge R.B.C.s. Neo-vascularization was also evident.

35. H&E stained section of CWT (paragenital buffalo wart) histologically revealed marked proliferation of the epithelium as well as proliferation of dermal fibroblasts. Marked thickening of the epidermal layers along with prominent changes in the stratum granulosum characterized by individual and cluster of cells with clear cytoplasm (koilotosis). The dermis consisted of densely packed fibroblasts and dense irregular collagenous connective tissue. The microscopic features confirmed the case to be a typical fibropapilloma.

36. Buffalo teat papilloma (NTP-17): section of TWT (BTP) histopathologically revealed hyperkeratinization with basket wave appearance in keratin layer, acanthosis, keratohyaline granules, koilocytes and few mitotic changes in the basal cell layer. No inclusion body was detected. Koilocytes were seen with both partial and complete cytoplasmic vacuolations. Micrograph of BTP was diagnostic to be a case of true papilloma.

37. Cattle teat wart or teat papilloma (TP): WMP-47: Teat wart biopsy: Microscopically mild cornification, acanthosis, fibrous tissue islands in between the proliferated neoplastic keratinocytes with variable length, elongated rete pegs penetrating in prominent dermal fibrous tissue. The histopathologic feature was suggestive of fibropapilloma.

38. Cattle teat wart or teat papilloma (TP): HWH-23: Teat wart biopsy: Microscopically hyperplasia with marked acanthosis in stratum spinosum with few koilocytes. Histopathological features were suggestive of fibropapilloma.


42. Buffalo origin: (BCWT: NTP-53: Limb Wart): H&E stained section of CWT of a she buffalo revealed fibrocellular proliferative changes along with engorgement and
infiltration of mononuclear cells. The case was diagnosed to be a buffalo fibropapilloma.

43. Buffalo origin: (BCWT: BDN-29: Wart on head region): Dermal layer revealed large, proliferating, plump fibroblasts arranged in haphazard whorls and fascicles. The microscopic features confirmed the case as fibrop papilloma.

44. Buffalo origin: (BCWT: BDN-39: Peri ophthalmic wart): Microscopic examination revealed marked ortho-keratotic hyper keratosis. The dermal papillae were elongated with irregular rete ridges formation covered by acanthotic epidermis. In the prickle cell layer, single cells or small groups of cells with vacuolated cytoplasm were seen.

45. Cattle origin: (CCWT: NDHF;MSD-04: Inguinal wart): H&E stained section of CWT histologically revealed finger like projections covered by hyper keratinized layers and hyperplasia of stratum spinosum. In connective tissue stroma, connective tissue proliferation along with dilation of blood vessels was seen.

46. Cattle origin : HLXHF: Squat type wart around eyes)H&E stained section of CCWThistologically revealed hyperplasia of epidermis, vacuolating cells in some of the keratinized area near the border of the finger like projections.

47. Buffalo perivulval wart: (BCWT: MSD-14): H&E stained section of CWT (paragenital buffalowart) histologically revealed marked proliferation of the epithelium as well as proliferation of dermal fibroblasts. Marked thickening of the epidermal layers along with prominent changes in the stratum granulosum characterized by individual and cluster of cells with clear cytoplasm (koilocytosis). The dermis consisted of densely packed fibroblasts and dense irregular collagenous connective tissue. The microscopic features confirmed the case to be a typical fibropapilloma.

48. Buffalo teat papilloma: Cross section of TWT (BTP:BKU-07) histopathologically revealed hyperkeratinization with basket wave appearance in keratin layer, acanthosis, keratohyaline granules, koilocytes and few mitotic changes in the basal cell layer. No inclusion body was detected. Koilocytes were seen with both partial and complete cytoplasmic vacuolations. Micrograph of BTP was diagnostic to be a case of true papilloma.

49. Cattle teat wart or teat papilloma (CTP: ND Cow :NTP-65): Mild cornification, acanthosis, fibrous tissue islands in between the proliferated neoplastic keratinocytes with variable length, elongated rete peges penetrating in prominent dermal fibrous tissue. The histopathologic feature was suggestive of fibropapilloma (Figure-27, B).

50. Cattle teat wart or teat papilloma (CTP: CBJ Cow: HWH-22): Hyperplasia with marked acanthosis in stratum spinosum with few koilocytes. Histopathological features were suggestive of fibropapilloma (Figure-27, C)
51. Cattle udder wart (CTP: CBJ Cow: PRL-7): Marked hyper keratosis and acanthosis in stratum spinosum with few koilocytes. The tumor was seen to consist of smooth connective tissue covered by hyperplastic epidermis with acanthosis and hyper keratosis. Fibropapilloma. (Figure-27, D).


54. CWT buffalo origin (BCWT: MDH-27: Barrel lesion) Histologic section showed marked hyperkeratosis and acanthosis. Some cells also revealed signs of apoptosis in the epidermis and proliferating fibroblasts in the tumour stroma. Histopathologically the tumour was diagnosed as fibropapilloma.

4. 3 Electron Microscopic Studies

4.3.1 Scanning Electron Microscopic study

To study the virus induced cytomorphological changes the histological studies were made but to study the virus induced topographic changes of the tissue and or cell surface of the tumour tissue, SEM studies were made. Cutaneous warts including teat warts biopsies were tested under SEM of both cattle and buffaloes and those revealed longitudinal folds (Figure-44, B,C&D) (lateral view), multiple projections and some pores (Figure-44,G&H) over the surface of warts (epical view), multiple grooves inside the pores (Figure-44,B&E) (inner surface). SEM study also revealed numerous pores throughout the surface of the wart (Figure-44, B,E, F, G &H, Figure-45,B&F) which may be the reason of the sponge like appearance of the wart. As compared to healthy skin tissue, in the papillomatous lesions there were marked engorgement of the blood vessels (Figure-45,D), massive proliferation of the ectodermal and mesodermal cells. There were distinct hyperproliferative changes in epidermal layer as compared to healthy skin tissue. Great variability in cytoskeleton of the cells was also noted along with proliferative changes of the cells in both BCWT and CCWT cases. No virus particle or virion was detected in the tumour specimens. Proliferative changes were higher in CCWT cases as compared to BCWT cases.

4.3.2 Transmission Electron Microscopic study

Ultrastructurally, epidermis of normal skin showed rounded nucleus and cytoplasm contained numerous membrane bound electron dense mitochondria and rough endoplasmic reticulum.
In all suspension of skin lesion fragments negatively contrasted and examined under TEM, it was possible to observe papillomavirus particles, rounded, non-enveloped, arranged in groups, characterized as full and empty with icosahedral symmetry. Transmission electron microscopic examination of wart tissue homogenates by negative staining technique also demonstrated virions and virus like particles of approximately 35-40 nm in diameter, identified to be BPV like virions (Fig-52, G). Very similar type of virions of BPV were demonstrated by electron microscopic examination of tumour tissue by the negative staining technique (Catroxo et al., 2005, Turk et al., 2005). The diameter of the virions measured approximately 40 nm.

Small intra-nuclear aggregates of viral particles were found in few keratinocytes, the cytoplasm of which was almost free of organelles and cytoskeletal filaments. In the epidermocytes, changes both in the nucleus (nuclear changes) and cytoplasm were evident characterized by nuclear and cytoplasmic organelles. In some of the epidermocytes, the nuclear membrane had disrupted and more or less crescent-shaped clumps of chromatin persisted. In other cells, the nuclei were of normal appearance, but cytoplasmic vacuoles were present. In some epidermocytes, cytokeratin filaments were arranged in multiple bundles of different size and orientation. In such cells the desmosomes had disappeared and only cytoplasmic tags persisted, so that cells were more or less separated from each other.

Epidermal cells of fibropapilloma showed pleomorphic normal sized nucleus with prominent intercellular space and numerous microvilli on cell membrane. Some cells had prominent nucleolus. Higher magnification of these cells showed enlarged or margined nucleolus and electron dense tonofilaments in the cytoplasm. Cornified cells had elongated nucleus with less pronounced margined heterochromatin and marginally placed nucleolus. Cells with stellate shaped nuclei having margined electron dense heterochromatin and without nucleolus were seen and adjoining areas showed granular cytoplasm with membraneless swollen mitochondria and degranulated rough endoplasmic reticulum.

TEM studies of stratum corneum of CCWT revealed disrupted desmosomes, nuclear membrane blabbing and presence of keratohyaline granules in corneum cells. Corneum cell cytoplasm showed degeneration of keratin fibrils, RER swelling, loss of mitochondrial Christie and presence of irregular keratohyalin granules, dense chromatin aggregate along with virions in pool of lytic sub cellular structures. Productive phase of virus replication were noted in both CCWT and BCWT cases on TEM studies particularly in keratinocytes. The cells revealed severe disruption of desmosomes, cytoskeleton and swollen sub cellular structures. The nucleoli were having irregular contour, irregular distribution of chromatin and margination of nucleolus. Elongation of nucleus represented densely packed with papilloma virus like particles.
TEM examination and ultra-structural studies of epidermis of apparently normal skin showed rounded nucleus and cytoplasm contained numerous membrane bound electron dense mitochondria and rough endoplasmic reticulum (RER). Compared to this, epidermal cells of fibropapilloma revealed pleomorphic nucleus with prominent intercellular space and numerous microvilli on cell membrane. Higher magnification of these cells showed enlarged and or marginated nucleolus and electron dense tonofilaments in cell cytoplasm. Similarly, higher magnification of tumour cells showed distinct nucleolus with presence of both pars amorphous and pars granulosa.

Cells with elongated nucleus with less pronounced marginated heterochromatin and marginally placed nucleolus were seen. Intact or disrupted electron dense fibrous structures were present along with pleomorphic nuclei containing keratinocytes. Electron dense secretory vesicle-like structures were seen surrounded by fibres and round particulate structures.

TEM revealed marked changes in the epidermocytes with high nucleus to cytoplasmic (N/C) ratio, pleomorphic and bizarre shaped nuclei, prominent heterochromatin, electron dense cytokeratin filaments, indistinct cell membrane and marked intercellular spaces. The cytoplasm had multiple, small vacuoles with pyknotic nucleus and small aggregates of electron dense PVs like particles.

4.4 Polymerase chain reaction (PCR) analysis of wart samples

Results of Polymerase Chain Reaction Analysis of tumour samples:

4.4.1 DNA isolation

The viral DNAs from the skin warts and teat warts samples were isolated using DNA extraction kit (Qiagen, Germany) on 1.5% agarose gel electrophoresis, the isolated DNA showed a single band confirming the purity and perfectness of the genome.

4.4.2 PCR amplification

Amplification of L1 (late protein in LCR, using type specific BPV primers) by polymerase chain reaction (PCR) is diagnostic for the detection of bovine papillomavirus DNA. Following PCR amplification for BPV-1 LCR (L1) and BPV-2 LCR (L1), the expected band of approximately 301 and 165 bp were detected in the DNA from cutaneous as well as teat papillomas from both cattle and buffalo. No band was ever amplified from controls having no DNA, showing that the reaction was specific.

To investigate the prevalent BPV types in WB and for the detection of aetiological agent of cutaneous warts (CWTs) and teat warts (TWTs) of both cattle and buffalo, CWT and TWT samples were subjected to different PCR assays and results has been summarized in
All together ninety four numbers of cattle cutaneous wart samples (CCWT, n = 94), 32 numbers of cattle teat wart (CTWT, n = 32) samples, and 18 numbers of buffalo cutaneous wart (BCWT, n = 18) samples and 16 numbers of buffalo teat wart (BTWT, n = 16) samples and twenty four healthy cutaneous biopsy specimens including teatskin samples from apparently healthy animals, that devoid of warts were collected for the PCR based detection of the virus types, from different organized dairy farms, Goshalas, private dairies and from unorganized small rural dairies from different districts of West Bengal. DNA extracted from all wart samples irrespective of CWT and TWT as well as normal skin was analysed by PCR using primer of BPV-1 (L1 gene), BPV-2 (L1 gene), BPV-5 (L1 gene), and BPV-9 (L1 gene and BPV-10 (L1gene) BPV DNA was detected in all CWTs and few healthy skin samples. BPV-2 specific DNA was detected in two normal skin (healthy skin) samples using primer of BPV-2 and in 43 numbers of CWTs. And using primer of BPV-1, BPV-1 specific DNA amplification and amplified product of approximately 301 bp was obtained in 32 numbers of CWTs. Besides BPV-1 and BPV-2 types, mixed infection or both the DNA amplification were noted in 38 numbers of CWTs and 5 numbers of TWTs. Mixed infection of BPV-1 and BPV-2, were detected in the same animal and in the same lesion. Results of PCR study from CWTs and normal skin samples were presented in tables (Table-118-123). PCR amplification and dissociation plots or graphs have shown in figures (Figure-52-55). Real time PCR results of both cattle and buffalo demonstrated BPV-1 and BPV-2 DNA and revealed an increase in fluorescence at 80.40 ± 1.24 °C in BPV-1 and 80.20 ± 1.20 °C in BPV-2 respectively (Figure 52-54). Individual sample demonstrates different graph fluoroescing at 75°C aswellas at 80 °C.

4.4.2.1 PCR based detection of BPV types in CCWT samples

Table-118: Detection of BPV in different cutaneous wart (CCWT) biopsy materials of cattle by conventional PCR

<table>
<thead>
<tr>
<th>Sl No</th>
<th>Animal ID</th>
<th>Sample ID</th>
<th>Species details with Breed type</th>
<th>Anatomical Location, number and size of warts</th>
<th>Biopsy materials collected</th>
<th>PCR Results</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>BPV-1</td>
</tr>
<tr>
<td>1</td>
<td>STP-109</td>
<td>CCWT-1(RKM-1)</td>
<td>JYXGIR MC,10 Months</td>
<td>Cauliflower like warts on left ear flap and face, n=5, 2-3 cm</td>
<td>EBM from the ear lesion</td>
<td>+ve</td>
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<tr>
<td>2</td>
<td>STP-114</td>
<td>CCWT-2</td>
<td>HFXS HF, 2 Years</td>
<td>Cauliflower like warts on head and ears, n=3, 2-3 cm</td>
<td>PBM from the head lesion</td>
<td>+ve</td>
</tr>
<tr>
<td>3</td>
<td>STP-16</td>
<td>CCWT-3</td>
<td>CBJ HF</td>
<td>Dome shaped warts on head and neck, n=9,3-4 cm</td>
<td>EBM from the neck lesion</td>
<td>-ve</td>
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<tr>
<td>4</td>
<td>STP-20</td>
<td>CCWT-4</td>
<td>CBJ Cow</td>
<td>Dome shaped warts on para-genital region, n=6, 1-2 cm</td>
<td>PBM from the para-genital lesion</td>
<td>+ve</td>
</tr>
<tr>
<td></td>
<td>Case No.</td>
<td>Primary Breed</td>
<td>Age</td>
<td>Location and Description</td>
<td>Test Results</td>
<td>Notes</td>
</tr>
<tr>
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</tr>
<tr>
<td>5</td>
<td>NDA-147</td>
<td>CCWT-5</td>
<td>CB HF (1XBH-543), 1 Year</td>
<td>Cauliflower-like pedunculated warts on hind limbs, n=5, 2-3 cm</td>
<td>EBM from the hind limb lesion</td>
<td>+ ve + ve - ve - ve - ve</td>
</tr>
<tr>
<td>6</td>
<td>NDA-152</td>
<td>CCWT-6</td>
<td>CB HF (3XHI-01), 2 Years</td>
<td>Cauliflower-like pedunculated warts on neck and thorax</td>
<td>PBM from the lesion of thorax</td>
<td>+ ve + ve - ve - ve - ve</td>
</tr>
<tr>
<td>7</td>
<td>NDA-301</td>
<td>CCWT-7</td>
<td>JTH FC, 10 Months</td>
<td>Dome-shaped warts on eyelids and ears</td>
<td>EBM from the eyelid lesion, n=12, 2-3 cm</td>
<td>+ ve - ve - ve - ve - ve</td>
</tr>
<tr>
<td>8</td>
<td>NDA-247</td>
<td>CCWT-8</td>
<td>GHF, 2 Years</td>
<td>Squat type warts on left axilla and ventral abdomen, n=12, 2-3 cm</td>
<td>EBM from the axillary lesion</td>
<td>+ ve + ve - ve - ve - ve</td>
</tr>
<tr>
<td>9</td>
<td>HWH-32</td>
<td>CCWT-9</td>
<td>HLX FC, 2 Years</td>
<td>Cauliflower-like warts on head, neck and belly, n=21, 1-3 cm</td>
<td>PBM from the lesion of belly</td>
<td>+ ve - ve - ve - ve - ve</td>
</tr>
<tr>
<td>10</td>
<td>HWH-37</td>
<td>CCWT-10</td>
<td>CI HF, 3 Years</td>
<td>Squat type warts on back and hump, n=8, 2-3 cm</td>
<td>EBM from the hump lesion</td>
<td>+ ve + ve - ve - ve - ve</td>
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<tr>
<td>11</td>
<td>HWH-05</td>
<td>CCWT-11</td>
<td>CBJ HF, 3 Years</td>
<td>Round and dome-shaped, sessile type warts on neck and shoulder, n=20, 1-3 cm</td>
<td>PBM from the lesion of shoulder</td>
<td>+ ve + ve + ve - ve - ve</td>
</tr>
<tr>
<td>12</td>
<td>KKT-24</td>
<td>CCWT-12</td>
<td>HLX HF, 3 Years</td>
<td>Squat type warts on nose and around the eyes, n=24, 1-3 cm</td>
<td>EBM from the nasal lesion</td>
<td>+ ve + ve - ve - ve - ve</td>
</tr>
<tr>
<td>13</td>
<td>KKT-37</td>
<td>CCWT-13</td>
<td>CB HF, 4 Years</td>
<td>Irregular dome-shaped warts on axilla, ventral belly and perineum, n=21, 2-4 cm</td>
<td>EBM from the perineum</td>
<td>+ ve - ve + ve - ve - ve</td>
</tr>
<tr>
<td>14</td>
<td>KKT-10</td>
<td>CCWT-14</td>
<td>ND Cow, 6 Years</td>
<td>Club-shaped warts on ventral abdomen, n=7, 2-3 cm</td>
<td>EBM from the abdominal lesion</td>
<td>+ ve + ve - ve - ve - ve</td>
</tr>
<tr>
<td>15</td>
<td>HLY-01</td>
<td>CCWT-15</td>
<td>CBJ Cow, 3 Years</td>
<td>Club-shaped warts on neck and shoulder, n=20, 5-8 cm</td>
<td>PBM from the neck lesion</td>
<td>+ ve + ve + ve - ve - ve</td>
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<tr>
<td>16</td>
<td>HLY-03</td>
<td>CCWT-16</td>
<td>Gir HF, 2 Years</td>
<td>Pedunculated warts on vulva and anus, n=14, 2-3 cm</td>
<td>PBM from the vulval lesion</td>
<td>+ ve - ve - ve - ve - ve</td>
</tr>
<tr>
<td>17</td>
<td>HLY-13</td>
<td>CCWT-17</td>
<td>CBJ Cow, 3 Years</td>
<td>Pedunculated warts on face and ears, n=20, 5-8 cm</td>
<td>EBM from the facial lesion</td>
<td>- ve + ve - ve - ve - ve</td>
</tr>
<tr>
<td>18</td>
<td>HLY-23</td>
<td>CCWT-18</td>
<td>CBJ Cow, 3 Years</td>
<td>Pedunculated warts on vulva and anus, n=14, 2-3 cm</td>
<td>EBM from the anal lesion</td>
<td>- ve + ve - ve - ve - ve</td>
</tr>
<tr>
<td>19</td>
<td>BBM-2</td>
<td>CCWT-19</td>
<td>Gir FC, 13 Months</td>
<td>Nodular, non-pedunculated warts on hind limbs, n=20, 1-3 cm</td>
<td>EBM from the hind limb lesion</td>
<td>+ ve - ve - ve - ve - ve</td>
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<tr>
<td>No.</td>
<td>Animal Code</td>
<td>Biopsy Code</td>
<td>Age/Details</td>
<td>Lesion Description</td>
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<tr>
<td>20</td>
<td>BBM-8</td>
<td>CCWT-20</td>
<td>HLX Cow, 3 Years</td>
<td>Squat type warts on vulva and linea ulba, n = 15,2-3 cm</td>
<td>PBM from the vulval lesion</td>
<td>+ve -ve -ve -ve -ve</td>
</tr>
<tr>
<td>21</td>
<td>BBM-11</td>
<td>CCWT-21</td>
<td>Gir HF, 2 Years</td>
<td>Pedunculated warts on neck, dewlap and thorax, n = 18, 2-3 cm</td>
<td>EBM from the dewlap lesion</td>
<td>+ve -ve -ve -ve -ve</td>
</tr>
<tr>
<td>22</td>
<td>BBM-44</td>
<td>CCWT-22</td>
<td>Gir HF, 2 Years</td>
<td>Cauliflower like warts at peri-orbital region, n=15, 1-3 cm</td>
<td>EBM from the peri-orbital lesion</td>
<td>+ve -ve -ve -ve -ve</td>
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<tr>
<td>23</td>
<td>WMP-03</td>
<td>CCWT-23</td>
<td>CBJ HF, 2.5 Years</td>
<td>Cauliflower like warts on face and ears, n=14, 2-3 cm</td>
<td>EBM from the facial lesion</td>
<td>+ve -ve -ve -ve -ve</td>
</tr>
<tr>
<td>24</td>
<td>WMP-05</td>
<td>CCWT-24</td>
<td>NDMC, 11 Months</td>
<td>Irregular dome shaped warts on face and fore limbs, n=18, 1-2 cm</td>
<td>PBM from the fore limb lesion</td>
<td>+ve +ve -ve -ve -ve</td>
</tr>
<tr>
<td>25</td>
<td>WMP-08</td>
<td>CCWT-25</td>
<td>CBJ FC, 10 Months</td>
<td>Round, non pedunculated warts on shoulder region, n=16, 2-3 cm</td>
<td>PBM from the shoulder lesion</td>
<td>+ve -ve -ve -ve -ve</td>
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<td>26</td>
<td>WMP-12</td>
<td>CCWT-26</td>
<td>CBJ FC, 10 Months</td>
<td>Cauliflower like pedunculated warts on right axilla and ventral abdomen, n=23, 2-3 cm</td>
<td>PBM from the facial lesion</td>
<td>+ve -ve -ve -ve -ve</td>
</tr>
<tr>
<td>27</td>
<td>EMP-01</td>
<td>CCWT-27</td>
<td>NDHF, 2 Years</td>
<td>Cauliflower like pedunculated warts on neck, head and edges of buccal cavity, n = 18, 1-1.5 cm</td>
<td>EBM from the head lesion</td>
<td>-ve +ve -ve -ve -ve</td>
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<td>28</td>
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<td>CCWT-28</td>
<td>ND BK, 3 Years</td>
<td>Tag type warts at inguinal region and perineum, n=14, 1-2 cm</td>
<td>EBM from the facial lesion</td>
<td>-ve +ve -ve -ve -ve</td>
</tr>
<tr>
<td>29</td>
<td>EMP-08</td>
<td>CCWT-29</td>
<td>NDHF, 2.5 Years</td>
<td>Cauliflower like pedunculated warts on ventral surface of abdomen, n = 17,1-1.5 cm</td>
<td>PBM from the belly lesion</td>
<td>-ve +ve -ve -ve -ve</td>
</tr>
<tr>
<td>30</td>
<td>EMP-10</td>
<td>CCWT-30</td>
<td>ND HF, 3 Years</td>
<td>Nodular squat type warts on head, cheeks and ears, n = 5, 2 cm</td>
<td>PBM from the cheeks lesion</td>
<td>-ve +ve -ve -ve -ve</td>
</tr>
<tr>
<td>31</td>
<td>CPS, HWH</td>
<td>HCCS-1</td>
<td>ND HF, 3 Years</td>
<td>Normal skin, without any cutaneous lesion</td>
<td>HSB(healthy skin biopsy)</td>
<td>-ve -ve -ve -ve -ve</td>
</tr>
<tr>
<td>32</td>
<td>SLF KLY</td>
<td>HCCS-2</td>
<td>Haryana HF, 3 Years</td>
<td>Normal skin, without any cutaneous lesion</td>
<td>HSB(healthy skin biopsy)</td>
<td>-ve +ve -ve -ve -ve</td>
</tr>
<tr>
<td>33</td>
<td>PGGSBS MDA</td>
<td>HCCS-3</td>
<td>Gir HF, 3 Years</td>
<td>Normal skin, without any cutaneous lesion</td>
<td>HSB(healthy skin biopsy)</td>
<td>-ve +ve -ve -ve -ve</td>
</tr>
<tr>
<td>34</td>
<td>NDRI KLY</td>
<td>HCCS-4</td>
<td>JTH, HF-3 Years</td>
<td>Normal skin, without any cutaneous lesion</td>
<td>HSB(healthy skin biopsy)</td>
<td>-ve -ve -ve -ve -ve</td>
</tr>
</tbody>
</table>
Result of conventional PCR assay as carried out in thirty CCWT samples and four healthy skin samples have shown in table (Table-118). PCR amplification yielded specific products of 165 bp in size in seven CCWT samples and in two healthy skin samples and 301 bp in size in thirteen CCWT samples. Mixed type infection of BPV-1 and BPV-2 was detected in ten CCWT samples.

Besides CCWT biopsy materials BCWT biopsy materials were also tested by conventional PCR and resulted has been presented in table (Table-119).

### 4.4.2.2 PCR based detection of BPV types in BCWT samples

**Table-119: PCR Results with Bubaline cutaneouswart (BCWT) DNA samples by normal /conventional PCR**

<table>
<thead>
<tr>
<th>Sl No</th>
<th>Animal no</th>
<th>Sample ID</th>
<th>Species details with Breed type</th>
<th>Anatomical location of warts</th>
<th>Materials collected</th>
<th>PCR Results</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>BPV-1</td>
</tr>
<tr>
<td>1</td>
<td>BKU-03</td>
<td>BCWT-1</td>
<td>Non-descript buffalo male calf(ND BF MC)</td>
<td>Left ear pinna</td>
<td>EBM from the ear lesion</td>
<td>-ve</td>
</tr>
<tr>
<td>2</td>
<td>BKU-35</td>
<td>BCWT-2</td>
<td>Indian water buffalo heifer</td>
<td>Head, neck and wither</td>
<td>EBM from the wither lesion</td>
<td>+ ve</td>
</tr>
<tr>
<td>3</td>
<td>BKU-36</td>
<td>BCWT-3</td>
<td>Indian water buffalo heifer</td>
<td>Neck and fore limbs</td>
<td>EBM from the neck lesion</td>
<td>+ ve</td>
</tr>
<tr>
<td>4</td>
<td>MDH-03</td>
<td>BCWT-4</td>
<td>Murrah buffalo(MB Cow)</td>
<td>Inter scapular region</td>
<td>EBM from Inter scapular regional lesion</td>
<td>- ve</td>
</tr>
<tr>
<td>5</td>
<td>MDH-09</td>
<td>BCWT-5</td>
<td>Murrah buffalo(MB Cow)</td>
<td>Face, eyes and ear pinna</td>
<td>EBM from the facial lesion</td>
<td>-ve</td>
</tr>
<tr>
<td>6</td>
<td>MDH-17</td>
<td>BCWT-6</td>
<td>Murrah buffalo</td>
<td>Around vulva</td>
<td>PBM from the genital lesion</td>
<td>+ ve</td>
</tr>
<tr>
<td>7</td>
<td>MDH-27</td>
<td>BCWT-7</td>
<td>Murrah buffalo</td>
<td>Chest and barrel</td>
<td>EBM from the chest lesion</td>
<td>-ve</td>
</tr>
<tr>
<td>8</td>
<td>NTP-10</td>
<td>BCWT-8</td>
<td>Murrah buffalo(MB HF)</td>
<td>Back region</td>
<td>EBM from the back lesion</td>
<td>+ ve</td>
</tr>
<tr>
<td>9</td>
<td>NTP-14</td>
<td>BCWT-9</td>
<td>Murrah buffalo(MB HF)</td>
<td>Shoulder, back and thorax</td>
<td>EBM from the chest lesion</td>
<td>-ve</td>
</tr>
<tr>
<td>10</td>
<td>NTP-15</td>
<td>BCWT-10</td>
<td>Murrah buffalo(MB HF)</td>
<td>Medial canthus of the eye</td>
<td>PBM from the peri-orbital lesion</td>
<td>+ ve</td>
</tr>
<tr>
<td>11</td>
<td>NTP-53</td>
<td>BCWT-11</td>
<td>Non describe she buffalo</td>
<td>Back and fore limbs</td>
<td>EBM from the back lesion</td>
<td>-ve</td>
</tr>
<tr>
<td>12</td>
<td>BDN-29</td>
<td>BCWT-12</td>
<td>Non describe buffalo heifer(ND BF HF)</td>
<td>Head and neck</td>
<td>EBM from the head lesion</td>
<td>+ ve</td>
</tr>
<tr>
<td>13</td>
<td>BDN-39</td>
<td>BCWT-13</td>
<td>Non describe buffalo heifer(ND BF HF)</td>
<td>Around the eyes</td>
<td>PBM from the peri orbital lesion</td>
<td>- ve</td>
</tr>
<tr>
<td>14</td>
<td>BDN-50</td>
<td>BCWT-14</td>
<td>Murrah buffalo(MB HF)</td>
<td>Back and barrel</td>
<td>EBM from the abdominal lesion</td>
<td>- ve</td>
</tr>
<tr>
<td>15</td>
<td>MSD-14</td>
<td>BCWT-15</td>
<td>Murrah she</td>
<td>Around vulva</td>
<td>PBM from the</td>
<td>+ ve</td>
</tr>
</tbody>
</table>

Results | 315
Results

<table>
<thead>
<tr>
<th>Sl No</th>
<th>Animal no</th>
<th>Sample ID</th>
<th>Collection/Submission time</th>
<th>Species</th>
<th>Details with Breed type</th>
<th>Anatomical Location of Warts and type</th>
<th>Type of specimen collected</th>
<th>PCR Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>WMP-47</td>
<td>CTP-1</td>
<td>January-2010</td>
<td>CBJ Cow, 7 Years</td>
<td>All four teats Rice grain type</td>
<td>EBM from LFT</td>
<td>+ve -ve -ve -ve -ve</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>WMP-02</td>
<td>CTP-2</td>
<td>December-2010</td>
<td>CBJ Cow, 6 Years</td>
<td>All four teats Rice grain type</td>
<td>EBM from LFT</td>
<td>-ve -ve -ve -ve -ve</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>HWH-23</td>
<td>CTP-3</td>
<td>December-2009</td>
<td>CBJ Cow, 6 Years</td>
<td>All four teats Rice grain type</td>
<td>EBM from LFT</td>
<td>+ve -ve -ve -ve -ve</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>HWH-22</td>
<td>CTP-4</td>
<td>December-2009</td>
<td>CBJ Cow, 8 Years</td>
<td>All four teats Rice grain type</td>
<td>EBM from LFT</td>
<td>+ve +ve -ve -ve -ve</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>STP-108</td>
<td>CTP-5</td>
<td>November-2009</td>
<td>HFXGIR Cow, 4 Years</td>
<td>Udder and teats, Rice grain type</td>
<td>EBM from the udder lesion</td>
<td>+ve -ve -ve -ve -ve</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>NTP-61</td>
<td>CTP-6</td>
<td>November-2009</td>
<td>ND Cow, 7 Years</td>
<td>All four teats Rice grain type</td>
<td>EBM from RFT</td>
<td>+ve -ve -ve -ve -ve</td>
<td></td>
</tr>
</tbody>
</table>

Summary of PCR on bubaline cutaneous wart samples: Healthy skin samples tested-4; BCWT samples tested-18; BPV-1 Type (+) ve= 7, BPV-2 (+) = 8, BPV-1 & BPV-2 (Both types) (+) ve= 03. The viral DNA from the cutaneous wart and teat wart samples were isolated using DNA extraction (Qiagen, Germany) on 1.5% agarose gel electrophoresis and the isolated DNA showed a single band confirming the purity and or perfectness of the genome. On PCR analysis, CWT and TP samples from different districts of West Bengal revealed the detection of L1 gene of BPV-1, BPV-2 and mixed infection of both the types. Result of PCR based detection of the etiologic agent of cattle teat papilloma has been presented in table (Table-120)
<table>
<thead>
<tr>
<th>Case</th>
<th>CTP</th>
<th>Date</th>
<th>Description</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>7</td>
<td>NTP-65</td>
<td>December 2009</td>
<td>ND Cow, 6 Years Caudal teats only, Frond type</td>
<td>EBM from RRT -ve -ve -ve -ve -ve</td>
</tr>
<tr>
<td>8</td>
<td>PRL-7</td>
<td>December 2010</td>
<td>CBJ Cow, 3 Years Dome shaped warts on udder and hind teats</td>
<td>EBM from the udder lesion + ve -ve -ve -ve -ve</td>
</tr>
<tr>
<td>9</td>
<td>PRL-18</td>
<td>June 2011</td>
<td>ND Cow, 4 Years Front right teats only, Rice grain type</td>
<td>EBM from RFT + ve -ve -ve -ve -ve</td>
</tr>
<tr>
<td>10</td>
<td>HLY-73</td>
<td>March 2010</td>
<td>CBJ Cow, 4 Years All four teats and udder, Filiform wart type, n=20, 3-4 cm</td>
<td>EBM from the udder lesion + ve +ve -ve -ve -ve</td>
</tr>
<tr>
<td>11</td>
<td>HLY-80</td>
<td>April 2010</td>
<td>CBJ Cow, 5 Years All four teats, Rice grain type, n=10, 2-3 cm</td>
<td>EBM from LFT + ve -ve -ve -ve -ve</td>
</tr>
<tr>
<td>12</td>
<td>BKU-20</td>
<td>November 2009</td>
<td>CBJ Cow, 3 Years All four teats, Rice grain type, n=20, 1-1.5 cm</td>
<td>EBM from RFT -ve -ve -ve -ve -ve</td>
</tr>
<tr>
<td>13</td>
<td>MSD-16</td>
<td>August 2012</td>
<td>CBJ Cow, 5 Years Hind teats, Round and dome shaped, n=5, 2-3 cm</td>
<td>EBM from both RRT &amp; LRT -ve -ve -ve -ve -ve</td>
</tr>
<tr>
<td>14</td>
<td>MSD-24</td>
<td>November 2012</td>
<td>CBJ Cow, 5 Years All four teats, Filiform warts, n=10, 2-3 cm</td>
<td>EBM from RFT + ve +ve -ve -ve -ve</td>
</tr>
<tr>
<td>15</td>
<td>UDP-24</td>
<td>November 2012</td>
<td>CBJ Cow, 4 Years All four teats, Frond type</td>
<td>EBM from LFT + ve +ve -ve -ve -ve</td>
</tr>
<tr>
<td>16</td>
<td>JPG-02</td>
<td>June 2012</td>
<td>Saiwal cow, 3 Years All four teats, Round and dome shaped warts, n=9, 2-3 cm</td>
<td>EBM from RFT + ve +ve -ve -ve -ve</td>
</tr>
<tr>
<td>17</td>
<td>BDN-35</td>
<td>May 2010</td>
<td>Gir Cow, 4 Years All four teats, Rice grain type, n=16, 1-2 cm</td>
<td>EBM from LFT -ve -ve -ve -ve -ve</td>
</tr>
<tr>
<td>18</td>
<td>BDN-38</td>
<td>May 2010</td>
<td>Sahiwal Cow, 4 Years Mammary gland Small dome shaped warts, n=20, 2-3 cm</td>
<td>EBM from the mammary lesion +ve -ve -ve -ve -ve</td>
</tr>
<tr>
<td>19</td>
<td>BDN-39</td>
<td>May 2010</td>
<td>HLX Cow, 4 Years All four teats, Frond type, n=20, 1-2 cm</td>
<td>EBM from RRT +ve -ve -ve -ve -ve</td>
</tr>
<tr>
<td>20</td>
<td>BBM-16</td>
<td>August 2012</td>
<td>CBJ Cow, 5 Years All four teats, Small filiform type, n=2-3 cm</td>
<td>PBM from LRT -ve -ve -ve -ve -ve</td>
</tr>
<tr>
<td>21</td>
<td>BBM-18</td>
<td>August 2012</td>
<td>CBJ Cow, 5 Years Teats and udder, Rice grain type, n=15, 2-3 cm</td>
<td>EBM from the udder lesion +ve -ve -ve -ve -ve</td>
</tr>
<tr>
<td>22</td>
<td>DJG-2</td>
<td>March 2009</td>
<td>CBJ Cow, 4 Years Teats only, Rice grain type, n=8, 1-1.5 cm</td>
<td>PBM from LFT -ve -ve -ve -ve -ve</td>
</tr>
<tr>
<td>No.</td>
<td>Code</td>
<td>CTP</td>
<td>Date</td>
<td>Breed</td>
</tr>
<tr>
<td>-----</td>
<td>--------</td>
<td>------</td>
<td>------------</td>
<td>-----------</td>
</tr>
<tr>
<td>23</td>
<td>DJG-5</td>
<td>CTP-23</td>
<td>March-2009</td>
<td>Siri cow</td>
</tr>
<tr>
<td>24</td>
<td>MDH-30</td>
<td>CTP-24</td>
<td>November-2012</td>
<td>CBJ Cow</td>
</tr>
<tr>
<td>25</td>
<td>MDH-33</td>
<td>CTP-25</td>
<td>November-2012</td>
<td>Sahiwal cow</td>
</tr>
<tr>
<td>26</td>
<td>EMP-41</td>
<td>CTP-26</td>
<td>January-2010</td>
<td>CBJ Cow</td>
</tr>
<tr>
<td>27</td>
<td>EMP-46</td>
<td>CTP-27</td>
<td>April-2011</td>
<td>CBJ Cow</td>
</tr>
<tr>
<td>28</td>
<td>KKT-9</td>
<td>CTP-28</td>
<td>August-2010</td>
<td>ND Cow</td>
</tr>
<tr>
<td>29</td>
<td>NDA-117</td>
<td>CTP-29</td>
<td>November-2009</td>
<td>JYXTH Cow</td>
</tr>
<tr>
<td>30</td>
<td>NDA-121</td>
<td>CTP-30</td>
<td>November-2009</td>
<td>CBJ Cow</td>
</tr>
<tr>
<td>31</td>
<td>NDA-123</td>
<td>CTP-31</td>
<td>January-2010</td>
<td>CBC 2XBJ-649</td>
</tr>
<tr>
<td>32</td>
<td>NDA-128</td>
<td>CTP-32</td>
<td>June-2010</td>
<td>Sahiwal cow</td>
</tr>
<tr>
<td>33</td>
<td>CPS-HWH</td>
<td>HCTS-1</td>
<td>January-2010</td>
<td>CBJ Cow</td>
</tr>
<tr>
<td>34</td>
<td>CPS-KOL</td>
<td>HCTS-2</td>
<td>June-2010</td>
<td>ND Cow</td>
</tr>
</tbody>
</table>

Result of conventional PCR assay as carried out in thirty two CTP samples (result shown in Table-120) revealed CTP was caused by BPV-1 (n = 14), BPV-2 (n = 03) and mixed type by (BPV-1 & BPV-2; n =5). BPV specific DNA was not detected in twelve CTP samples. Healthy cattle teat skin samples were negative to all BPV types tested. Although cattle teat papilloma (CTP) samples were tested by conventional PCR, bubaline teat wart (BTP) samples were subjected to real-time PCR and the result has been presented below (Table-121).
### 4.4.2.4 PCR based detection of BPV types in BTP/BTWT samples

**Table-121: PCR results with bubaline teat wart (BTWT)/ bubaline teat papilloma (BTP) DNA samples by Real time PCR**

<table>
<thead>
<tr>
<th>Sl No</th>
<th>Animal no</th>
<th>Sample ID</th>
<th>Sample collection /submission time</th>
<th>Species details with Breed type</th>
<th>Anatomical location of warts and type</th>
<th>Materials collected</th>
<th>BPV-1</th>
<th>BPV-2</th>
<th>BPV-5</th>
<th>BPV-9</th>
<th>BPV-10</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>BKU-07</td>
<td>BTP-1</td>
<td>November-2009</td>
<td>Murrah she buffalo cow (MB Cow)</td>
<td>Teats only Frond type</td>
<td>EBM from the teat lesion</td>
<td>+ve</td>
<td>-ve</td>
<td>-ve</td>
<td>-ve</td>
<td>-ve</td>
</tr>
<tr>
<td>2</td>
<td>BKU-21</td>
<td>BTP-2</td>
<td>November-2009</td>
<td>Murrah she buffalo (MB Cow)</td>
<td>All four teats Rice grain type</td>
<td>EBM from the teat lesion</td>
<td>+ve</td>
<td>-ve</td>
<td>-ve</td>
<td>-ve</td>
<td>-ve</td>
</tr>
<tr>
<td>3</td>
<td>BKU-23</td>
<td>BTP-3</td>
<td>November-2009</td>
<td>Indian she buffalo</td>
<td>All four teats Rice grain type</td>
<td>EBM from the teat lesion</td>
<td>-ve</td>
<td>+ve</td>
<td>-ve</td>
<td>-ve</td>
<td>-ve</td>
</tr>
<tr>
<td>4</td>
<td>NTP-02</td>
<td>BTP-4</td>
<td>December-2009</td>
<td>Murrah she buffalo(MB Cow)</td>
<td>Udder and teats Diffuse frond type</td>
<td>EBM from the teat lesion</td>
<td>-ve</td>
<td>+ve</td>
<td>-ve</td>
<td>-ve</td>
<td>-ve</td>
</tr>
<tr>
<td>5</td>
<td>NTP-05</td>
<td>BTP-5</td>
<td>December-2009</td>
<td>Murrah she buffalo cow (MB Cow)</td>
<td>Teats only Diffuse frond type</td>
<td>EBM from the teat lesion</td>
<td>- ve</td>
<td>-ve</td>
<td>-ve</td>
<td>-ve</td>
<td>-ve</td>
</tr>
<tr>
<td>6</td>
<td>NTP-08</td>
<td>BTP-6</td>
<td>December-2009</td>
<td>Murrah she buffalo cow (MB Cow)</td>
<td>Teats only Frond type</td>
<td>EBM from the teat lesion</td>
<td>-ve</td>
<td>+ve</td>
<td>-ve</td>
<td>-ve</td>
<td>-ve</td>
</tr>
<tr>
<td>7</td>
<td>NTP-17</td>
<td>BTP-7</td>
<td>December-2009</td>
<td>Murrah she buffalo(MB Cow)</td>
<td>Teats only Large frond type</td>
<td>EBM from the teat lesion</td>
<td>-ve</td>
<td>-ve</td>
<td>-ve</td>
<td>-ve</td>
<td>-ve</td>
</tr>
<tr>
<td>8</td>
<td>MDH-06</td>
<td>BTP-8</td>
<td>December-2009</td>
<td>Murrah she buffalo cow (MB Cow)</td>
<td>Teats only Frond type</td>
<td>EBM from the teat lesion</td>
<td>+ve</td>
<td>-ve</td>
<td>-ve</td>
<td>-ve</td>
<td>-ve</td>
</tr>
<tr>
<td>9</td>
<td>NDA-48</td>
<td>BTP-9</td>
<td>April-2010</td>
<td>Murrah she buffalo cow (MB Cow)</td>
<td>All four teats Rice grain type</td>
<td>EBM from the teat lesion</td>
<td>+ve</td>
<td>-ve</td>
<td>-ve</td>
<td>-ve</td>
<td>-ve</td>
</tr>
<tr>
<td>10</td>
<td>HWH-16</td>
<td>BTP-10</td>
<td>July-2010</td>
<td>Murrah she buffalo cow (MB Cow)</td>
<td>All four teats Rice grain type</td>
<td>EBM from the teat lesion</td>
<td>+ve</td>
<td>-ve</td>
<td>-ve</td>
<td>-ve</td>
<td>-ve</td>
</tr>
<tr>
<td>11</td>
<td>BBM-17</td>
<td>BTP-11</td>
<td>August-2012</td>
<td>Murrah she buffalo</td>
<td>All four teats Frond type</td>
<td>EBM from the teat lesion</td>
<td>-ve</td>
<td>+ve</td>
<td>-ve</td>
<td>-ve</td>
<td>-ve</td>
</tr>
<tr>
<td>12</td>
<td>BBM-27</td>
<td>BTP-12</td>
<td>August-2012</td>
<td>Surti she buffalo , 6 Years</td>
<td>All four teats Rice grain type</td>
<td>EBM from the teat lesion</td>
<td>-ve</td>
<td>+ve</td>
<td>-ve</td>
<td>-ve</td>
<td>-ve</td>
</tr>
<tr>
<td>13</td>
<td>MDH-14</td>
<td>BTP-13</td>
<td>August-2012</td>
<td>Murrah she buffalo cow (MB Cow)</td>
<td>All four teats Rice grain type</td>
<td>EBM from the teat lesion</td>
<td>-ve</td>
<td>+ve</td>
<td>-ve</td>
<td>-ve</td>
<td>-ve</td>
</tr>
<tr>
<td>14</td>
<td>BBM-42</td>
<td>BTP-14</td>
<td>December-2012</td>
<td>Murrah she buffalo cow (MB Cow), 4 Years</td>
<td>All four teats Rice grain type</td>
<td>EBM from the teat lesion</td>
<td>-ve</td>
<td>-ve</td>
<td>-ve</td>
<td>-ve</td>
<td>-ve</td>
</tr>
<tr>
<td>15</td>
<td>NDA-148</td>
<td>BTP-15</td>
<td>December-2012</td>
<td>Murrah she buffalo cow (MB Cow), 8 Years</td>
<td>All four teats Frond type</td>
<td>EBM from the teat lesion</td>
<td>+ve</td>
<td>-ve</td>
<td>-ve</td>
<td>-ve</td>
<td>-ve</td>
</tr>
<tr>
<td>16</td>
<td>KKT-7</td>
<td>BTP-16</td>
<td>June-2009</td>
<td>Murrah she buffalo cow (MB Cow), 8 Years</td>
<td>All four teats Rice grain type</td>
<td>EBM from the teat lesion</td>
<td>+ve</td>
<td>-ve</td>
<td>-ve</td>
<td>-ve</td>
<td>-ve</td>
</tr>
<tr>
<td>17</td>
<td>SLF</td>
<td>HBTS-1</td>
<td>August-2012</td>
<td>Murrah buffalo</td>
<td>Healthy NTB(normal teat)</td>
<td>-ve</td>
<td>-ve</td>
<td>-ve</td>
<td>-ve</td>
<td>-ve</td>
<td></td>
</tr>
</tbody>
</table>
Total BTP/BTWT samples tested, n=16, healthy teat skin sample tested, n= 4, BPV -1 (+) ve = 7, BPV-2(+) ve = 6, PCR (+) ve = 13,

Employing forward and reverse primers for amplification of L1 gene coding region within the BPV viral DNA, PCR amplification yielded specific products of 165 bp in size and 301 bp respectively in cutaneous wart samples as shown in tables (Table-118-123). Some of the PCR amplified products were confirmed by cloning and nucleotide sequencing.

### 4.4.2.5 Result of Real Time PCR

Real time PCR was standardized for molecular diagnosis of BPV in CWT cases in cattle. Result has been presented in table (Table-122)

**Table-122: Detection of BPV in different cutaneous wart biopsy materials of cattle by real-time PCR**

<table>
<thead>
<tr>
<th>Sl No</th>
<th>Animal ID</th>
<th>Sample ID</th>
<th>Species details with breed type</th>
<th>Anatomical location, number and size of warts</th>
<th>Biopsy materials collected</th>
<th>PCR Results</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>BPV-1</td>
</tr>
<tr>
<td>1</td>
<td>BDN-1</td>
<td>CCWT-31</td>
<td>CBJ HF,2 Years</td>
<td>Cauliflower like pedunculated warts on both sides of the neck, n=9, 2-4 cm</td>
<td>PBM from the neck lesion</td>
<td>-ve</td>
</tr>
<tr>
<td>2</td>
<td>BDN-6</td>
<td>CCWT-32</td>
<td>CBJ HF,2 Years</td>
<td>Cauliflower like warts on flank, axilla and thigh, n=20, 2-3 cm</td>
<td>EBM from the flank lesion</td>
<td>-ve</td>
</tr>
<tr>
<td>3</td>
<td>BDN-9</td>
<td>CCWT-33</td>
<td>CBJ HF,2 Years</td>
<td>Cauliflower like wart on paragenital region, n=1, 4 cm</td>
<td>EBM from the para-genital lesion</td>
<td>+ve</td>
</tr>
<tr>
<td>4</td>
<td>BDN-12</td>
<td>CCWT-34</td>
<td>CBJ HF,2 Years</td>
<td>Flattened non pedunculated warts on hind limbs, lumbar and axilla, n&gt;50, 1-3 cm</td>
<td>EBM from the lumbar lesion</td>
<td>+ve</td>
</tr>
<tr>
<td>5</td>
<td>BDN-15</td>
<td>CCWT-35</td>
<td>ND HF, 2.5 Years</td>
<td>Sessile type warts at para-genital region, n=7, 2-3 cm</td>
<td>PBM from the para-genital lesion</td>
<td>-ve</td>
</tr>
<tr>
<td></td>
<td>Case No.</td>
<td>Breed</td>
<td>Age</td>
<td>Lesion Description</td>
<td>Test Result</td>
<td>Location</td>
</tr>
<tr>
<td>---</td>
<td>----------</td>
<td>-------</td>
<td>-----</td>
<td>--------------------</td>
<td>-------------</td>
<td>----------</td>
</tr>
<tr>
<td>1</td>
<td>NTP-01</td>
<td>CCWT-36</td>
<td>CBJ HF, 1.5 Years</td>
<td>Globoid warts at ano-genital region, n=12, 1.5-2.5 cm</td>
<td>PBM from the anal lesion</td>
<td>+ve -ve -ve -ve -ve</td>
</tr>
<tr>
<td>2</td>
<td>NTP-04</td>
<td>CCWT-37</td>
<td>CBJ HF, 3.5 Years</td>
<td>Cauliflower like warts on neck and eyes, n=25, 2-3 cm</td>
<td>PBM from the eye lid lesion</td>
<td>+ve -ve -ve -ve -ve</td>
</tr>
<tr>
<td>3</td>
<td>NTP-07</td>
<td>CCWT-38</td>
<td>CBJ HF, 1.5 Years</td>
<td>One big sized cauliflower like wart on shoulder, n=1, 6.5 cm</td>
<td>PBM from the peri-orbital lesion</td>
<td>+ve -ve -ve -ve -ve</td>
</tr>
<tr>
<td>4</td>
<td>BKU-01</td>
<td>CCWT-39</td>
<td>CBJ HF, 2 Years</td>
<td>Cauliflower like warts on left eye and corner of the mouth, n=26, 2-3 cm</td>
<td>EBM from the oral commissure lesion</td>
<td>+ve -ve -ve -ve -ve</td>
</tr>
<tr>
<td>5</td>
<td>BKU-02</td>
<td>CCWT-40</td>
<td>ND HF, 1.5 Years</td>
<td>Pedunculated warts on ear tips, eye lids and distal fore legs, n=7, 1-1.5 cm</td>
<td>PBM from the fore limb lesion</td>
<td>+ve -ve -ve -ve -ve</td>
</tr>
<tr>
<td>6</td>
<td>BKU-04</td>
<td>CCWT-41</td>
<td>ND HF, 2 Years</td>
<td>Warts in cluster on neck, trunk and axillae, n=50, 4-5 cm</td>
<td>PBM from the trunk lesion</td>
<td>+ve +ve -ve -ve -ve</td>
</tr>
<tr>
<td>7</td>
<td>BKU-08</td>
<td>CCWT-42</td>
<td>ND young bull, 2.5 Years</td>
<td>Multiple lobular warts on flank and perineum, n=20, 2-2.5 cm</td>
<td>PBM from the flank lesion</td>
<td>+ve +ve -ve -ve -ve</td>
</tr>
<tr>
<td>8</td>
<td>MSD-01</td>
<td>CCWT-43</td>
<td>CBJ Cow, 4 Years</td>
<td>Proliferative lesions on eyes, mouth and lower fore legs, n=30, 3-4 cm</td>
<td>EBM from the orbital lesion</td>
<td>+ve -ve -ve -ve -ve</td>
</tr>
<tr>
<td>9</td>
<td>MSD-04</td>
<td>CCWT-44</td>
<td>ND HF, 2 Years</td>
<td>Cauliflower like masses at inguinal region, on left thigh and tail, n=15, 3-5 cm</td>
<td>EBM from the tail lesion</td>
<td>+ve +ve -ve -ve -ve</td>
</tr>
<tr>
<td>10</td>
<td>MSD-06</td>
<td>CCWT-45</td>
<td>HLX FC, 11 Months</td>
<td>Nodular warts on hind limbs and perineum, n=15, 8-10 cm</td>
<td>PBM from perineum lesion</td>
<td>-ve +ve -ve -ve -ve</td>
</tr>
<tr>
<td>11</td>
<td>MDH-02</td>
<td>CCWT-46</td>
<td>CBJ BK, 3 Years</td>
<td>Nodular warts on neck, dewlap and back, n=12, 2-3 cm</td>
<td>PBM from the dewlap lesion</td>
<td>-ve +ve -ve -ve -ve</td>
</tr>
<tr>
<td>12</td>
<td>MDH-04</td>
<td>CCWT-47</td>
<td>CBJ BK, 3 Years</td>
<td>Squat type warts on neck and back, n=20, 2-3 cm</td>
<td>PBM from the back lesion</td>
<td>-ve +ve -ve -ve -ve</td>
</tr>
<tr>
<td>13</td>
<td>MDH-07</td>
<td>CCWT-48</td>
<td>CBJ Cow, 3 Years</td>
<td>Club shaped warts on muzzle, ears and neck, n=20, 2-3 cm</td>
<td>PBM from the muzzle lesion</td>
<td>-ve +ve -ve -ve -ve</td>
</tr>
<tr>
<td>14</td>
<td>DJG-03</td>
<td>CCWT-49</td>
<td>NDHF, 2 Years</td>
<td>Cauliflower like pedunculated warts at peri-orbital region, n=12, 2-3 cm</td>
<td>EBM from the peri-orbital lesion</td>
<td>-ve +ve -ve -ve -ve</td>
</tr>
<tr>
<td>15</td>
<td>DJG-04</td>
<td>CCWT-50</td>
<td>CBJ FC, 18 Months</td>
<td>Sessile type warts on neck, dewlap and inter scapular region, n=16, 2-4 cm</td>
<td>EBM from dewlap lesion</td>
<td>-ve +ve -ve -ve -ve</td>
</tr>
<tr>
<td>16</td>
<td>PRL-03</td>
<td>CCWT-51</td>
<td>Sahiwal HF, 2</td>
<td>Cauliflower like pedunculated warts</td>
<td>PBM from the head lesion</td>
<td>+ve -ve -ve -ve -ve</td>
</tr>
<tr>
<td>Sample Code</td>
<td>CCWT or HCCS</td>
<td>Animal</td>
<td>Age (Years)</td>
<td>Lesion Description</td>
<td>Biopsy Material</td>
<td>Real-time PCR Result</td>
</tr>
<tr>
<td>-------------</td>
<td>--------------</td>
<td>--------</td>
<td>-------------</td>
<td>--------------------</td>
<td>----------------</td>
<td>---------------------</td>
</tr>
<tr>
<td>22 PRL-06</td>
<td>CCWT-52</td>
<td>Gir HF</td>
<td>2</td>
<td>Cauliflower like pedunculated warts on neck, dewlap and back, n=16, 3-4 cm</td>
<td>EBM from the back lesion</td>
<td>-ve +ve -ve -ve -ve</td>
</tr>
<tr>
<td>23 PRL-16</td>
<td>CCWT-53</td>
<td>RS HF</td>
<td>16 Months</td>
<td>Whole body warts, n=100, 1-5 cm</td>
<td>EBM from croup lesion</td>
<td>+ve +ve -ve -ve -ve</td>
</tr>
<tr>
<td>24 JPG-3</td>
<td>CCWT-54</td>
<td>CBJ MC</td>
<td>18 Months</td>
<td>Cauliflower like pedunculated warts around the scrotum, axilla and anus</td>
<td>PBM from the scrotal lesion</td>
<td>+ve -ve -ve -ve -ve</td>
</tr>
<tr>
<td>25 JPG-5</td>
<td>CCWT-55</td>
<td>CBJ HF</td>
<td>2.6 Years</td>
<td>Sessile type warts on neck, chest and belly, n=24, 3-4 cm</td>
<td>EBM from the chest lesion</td>
<td>-ve +ve -ve -ve -ve</td>
</tr>
<tr>
<td>26 CBR-1</td>
<td>CCWT-56</td>
<td>CBJ Cow</td>
<td>3 Years</td>
<td>Club shaped warts on neck, shoulder and around the eyes, n=20, 5-8 cm</td>
<td>PBM from the muzzle lesion</td>
<td>-ve +ve -ve -ve -ve</td>
</tr>
<tr>
<td>27 CBR-5</td>
<td>CCWT-57</td>
<td>CBJ Cow</td>
<td>3 Years</td>
<td>Sessile type warts on neck, chest and belly, n=35, 3-4 cm</td>
<td>EBM from the chest lesion</td>
<td>-ve +ve -ve -ve -ve</td>
</tr>
<tr>
<td>28 UDP-1</td>
<td>CCWT-58</td>
<td>CBJ HF</td>
<td>2 Years</td>
<td>Cauliflower like pedunculated warts on vulval lips and cleft, n=15, 4-5 cm</td>
<td>EBM from the vulval lesion</td>
<td>+ve -ve -ve -ve -ve</td>
</tr>
<tr>
<td>29 UDP-3</td>
<td>CCWT-59</td>
<td>ND HF</td>
<td>2 Years</td>
<td>Conical warts on vulva, n=15, 2-4 cm</td>
<td>PBM from the vulval lesion</td>
<td>+ve -ve -ve -ve -ve</td>
</tr>
<tr>
<td>30 DDP-3</td>
<td>CCWT-60</td>
<td>Gir Cow</td>
<td>4 Years</td>
<td>Nodular warts on fetlock and gluteal region, n=8, 2-5 cm</td>
<td>EBM from the fetlock lesion</td>
<td>-ve +ve -ve -ve -ve</td>
</tr>
<tr>
<td>31 SLF, KLY</td>
<td>HCCS-5</td>
<td>CBJ HF</td>
<td>2 Years</td>
<td>Healthy animal without any wart</td>
<td>Normal skin biopsy material</td>
<td>-ve -ve -ve -ve -ve</td>
</tr>
<tr>
<td>32 PBGSBS, NDA</td>
<td>HCCS-6</td>
<td>Gir Cow</td>
<td>4 Years</td>
<td>Healthy animal without any wart</td>
<td>Normal skin biopsy material</td>
<td>-ve -ve -ve -ve -ve</td>
</tr>
<tr>
<td>33 CPS, KOL</td>
<td>HCCS-7</td>
<td>ND HF</td>
<td>2 Years</td>
<td>Healthy animal without any wart</td>
<td>Normal skin biopsy material</td>
<td>-ve +ve -ve -ve -ve</td>
</tr>
<tr>
<td>34 GD, HF</td>
<td>HCCS-8</td>
<td>CBJ HF</td>
<td>2 Years</td>
<td>Healthy animal without any wart</td>
<td>Normal skin biopsy material</td>
<td>-ve +ve -ve -ve -ve</td>
</tr>
</tbody>
</table>

Real-time PCR was standardized for molecular diagnosis of BPV in CWT in cattle. A total thirty numbers of CCWT (CCWT-31-CCWT-60) samples and four numbers of apparently normal skin samples (HCCS-5-8) were tested. Results of real-time PCR has shown in Table (Table-122). Amplification and dissociation plots of real-time PCR figure (Figure-55). PCR amplification yielded specific products of 301 bp in size in eleven (n = 11) CCWT samples and 165 bp in size in fifteen (n = 15) CCWT samples. Mixed type infection of BPV-1 and BPV-2 was detected in five (n = 5) CCWT samples. PCR amplification yielded specific product of 165 bp size in one healthy skin sample too.
4.4.2.6 Result of real time SYBR Green PCR assay

In conventional PCR, the amplified product is confirmed by gel electrophoresis and image analysis but by real time, sample can be detected very fastly and specific. The real time PCR as conducted gave faster result. Here in this technique the positive reaction was detected by the accumulation of a fluorescent signal. CCWT samples (CCWT 61-CCWT-94) n=34 and healthy cattle cutaneous samples (HCCS-9 –HCCS-14) as tested by Syber Green PCR assay revealed BPV-1 type in one case,(BPV-1 +ve, n= 01, BPV-2 type in thirteen cases, (BPV-2 +ve, n=13) and mixed types in twenty cases (BPV-1 and -2 +ve, n=20) in CCWT samples and no BPV DNA type found in HCCS. Result of Syber Green PCR assay has been presented in table (Table-123).

Table -123: PCR Results with SYBER Green Q PCR of CCWT DNA samples

<table>
<thead>
<tr>
<th>Sl No</th>
<th>Animal no</th>
<th>Sample ID</th>
<th>Species details with breed type</th>
<th>Anatomical location of warts</th>
<th>Materials collected</th>
<th>PCR Results</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Bpv-1</td>
</tr>
<tr>
<td>1</td>
<td>DJG-01</td>
<td>CCWT-61</td>
<td>Local hill cow</td>
<td>Face and Neck</td>
<td>EBM from both the lesions</td>
<td>-ve</td>
</tr>
<tr>
<td>2</td>
<td>DJG-10</td>
<td>CCWT-62</td>
<td>CBJ MC, 8 Months</td>
<td>Face, cheek and neck</td>
<td>EBM from the cheek lesion</td>
<td>-ve</td>
</tr>
<tr>
<td>3</td>
<td>HWH-03</td>
<td>CCWT-63</td>
<td>CBJ HF</td>
<td>Shoulder and fore limbs</td>
<td>EBM from the fore limb lesion</td>
<td>-ve</td>
</tr>
<tr>
<td>4</td>
<td>HWH-04</td>
<td>CCWT-64</td>
<td>HLX HF</td>
<td>Neck region</td>
<td>EBM from the neck lesion</td>
<td>-ve</td>
</tr>
<tr>
<td>5</td>
<td>NDA-02</td>
<td>CCWT-65</td>
<td>CBJ HF</td>
<td>Head, neck and fore limbs</td>
<td>EBM from the head lesion</td>
<td>-ve</td>
</tr>
<tr>
<td>6</td>
<td>NDA-03</td>
<td>CCWT-66</td>
<td>ND HF</td>
<td>Fore limbs and thorax</td>
<td>EBM from the thorax lesion</td>
<td>-ve</td>
</tr>
<tr>
<td>7</td>
<td>NDA</td>
<td>HCS-9</td>
<td>NDHF</td>
<td>Skin sample</td>
<td>PBM from healthy skin</td>
<td>-ve</td>
</tr>
<tr>
<td>8</td>
<td>DJG</td>
<td>HCS-10</td>
<td>ND HF</td>
<td>Skin sample</td>
<td>PBM from healthy skin</td>
<td>-ve</td>
</tr>
<tr>
<td>9</td>
<td>HWH</td>
<td>HCS-11</td>
<td>CBJ HF</td>
<td>Skin sample</td>
<td>PBM from healthy skin</td>
<td>-ve</td>
</tr>
<tr>
<td>10</td>
<td>BKU-06</td>
<td>CCWT-67</td>
<td>ND HF</td>
<td>Chest and wither</td>
<td>EBM from wither lesion</td>
<td>-ve</td>
</tr>
<tr>
<td>11</td>
<td>BKU-19</td>
<td>CCWT-68</td>
<td>ND Bull, 2.5 Years</td>
<td>Fore limbs</td>
<td>EBM from the limb lesions</td>
<td>+ ve</td>
</tr>
<tr>
<td>12</td>
<td>NTP-11</td>
<td>CCWT-69</td>
<td>CBJ FC, 9 Months</td>
<td>Medial canthus of eye</td>
<td>EBM from eye lesion</td>
<td>+ ve</td>
</tr>
<tr>
<td>13</td>
<td>NTP-28</td>
<td>CCWT-70</td>
<td>Gir HF</td>
<td>Hind limb inter digital space</td>
<td>EBM from interdigital lesion of hind limb</td>
<td>+ ve</td>
</tr>
<tr>
<td>14</td>
<td>HLY-04</td>
<td>CCWT-71</td>
<td>ND BK</td>
<td>Poll region and neck</td>
<td>EBM from poll region lesion</td>
<td>+ ve</td>
</tr>
<tr>
<td>15</td>
<td>HLY-18</td>
<td>CCWT-72</td>
<td>GIR FC, 10 Months</td>
<td>Hind limb and perineum</td>
<td>EBM from perineum and hind limb</td>
<td>+ ve</td>
</tr>
<tr>
<td>Sample ID</td>
<td>Catalog ID</td>
<td>Host</td>
<td>Sample Type</td>
<td>Lesion Description</td>
<td>EBM Result</td>
<td>PBM Result</td>
</tr>
<tr>
<td>-----------</td>
<td>------------</td>
<td>------</td>
<td>-------------</td>
<td>--------------------</td>
<td>------------</td>
<td>------------</td>
</tr>
<tr>
<td>HLY-08</td>
<td>CCWT-73</td>
<td>Gir HF</td>
<td>Skin sample</td>
<td>Head, neck and trunk</td>
<td>-ve</td>
<td>-ve</td>
</tr>
<tr>
<td>MDH-08</td>
<td>CCWT-73</td>
<td>CBJ BK</td>
<td>Skin sample</td>
<td>Head, neck and trunk</td>
<td>-ve</td>
<td>+ve</td>
</tr>
<tr>
<td>MDH-10</td>
<td>CCWT-74</td>
<td>CBJ BK</td>
<td>Hind limbs</td>
<td>Hind limbs</td>
<td>+ve</td>
<td>-ve</td>
</tr>
<tr>
<td>MSD-08</td>
<td>CCWT-75</td>
<td>ND BK, 3 Years</td>
<td>Dome shaped warts on both side of the neck, shoulder and brisket</td>
<td>EBM from neck and brisket lesion</td>
<td>+ve</td>
<td>-ve</td>
</tr>
<tr>
<td>MSD-09</td>
<td>CCWT-76</td>
<td>ND HF, 3 Years</td>
<td>Around eyes</td>
<td>EBM from peri-orbital lesion</td>
<td>+ve</td>
<td>-ve</td>
</tr>
<tr>
<td>STP-10</td>
<td>CCWT-77</td>
<td>CBJ HF</td>
<td>Skin sample</td>
<td>EBM from the ear lesion</td>
<td>+ve</td>
<td>-ve</td>
</tr>
<tr>
<td>STP-11</td>
<td>CCWT-78</td>
<td>ND MC</td>
<td>Neck and fore limb</td>
<td>EBM from the neck lesion</td>
<td>+ve</td>
<td>-ve</td>
</tr>
<tr>
<td>EMP-05</td>
<td>CCWT-79</td>
<td>CBJ HF</td>
<td>Left thigh and axilla</td>
<td>EBM from thigh lesion</td>
<td>+ve</td>
<td>-ve</td>
</tr>
<tr>
<td>EMP-15</td>
<td>CCWT-80</td>
<td>ND MC, 10 Months</td>
<td>Fore limbs and chest</td>
<td>EBM from chest and limb lesion</td>
<td>+ve</td>
<td>-ve</td>
</tr>
<tr>
<td>BDN-07</td>
<td>CCWT-81</td>
<td>CBJ HF</td>
<td>Head, neck and fore limbs</td>
<td>EBM from neck lesion</td>
<td>+ve</td>
<td>-ve</td>
</tr>
<tr>
<td>BDN-10</td>
<td>CCWT-82</td>
<td>CBJ HF</td>
<td>Axilla and peri-vulva</td>
<td>PBM from axilla and peri-vulva</td>
<td>+ve</td>
<td>-ve</td>
</tr>
<tr>
<td>WMP-06</td>
<td>CCWT-83</td>
<td>NDHF, 2 Years</td>
<td>Fore limbs</td>
<td>PBM from fore limb lesion</td>
<td>+ve</td>
<td>-ve</td>
</tr>
<tr>
<td>WMP-15</td>
<td>CCWT-84</td>
<td>CBJ HF, 2 Years</td>
<td>Anal region, n=11, 2-3 cm</td>
<td>PBM from anal lesion</td>
<td>+ve</td>
<td>-ve</td>
</tr>
<tr>
<td>PRL-05</td>
<td>CCWT-85</td>
<td>Gir HF, 18 Months</td>
<td>Fore limbs and neck region, n=20, 1-2 cm</td>
<td>PBM from neck lesion</td>
<td>+ve</td>
<td>-ve</td>
</tr>
<tr>
<td>PRL-20</td>
<td>CCWT-86</td>
<td>RS HF, 16 Months</td>
<td>Hind limbs and perineum, n=20, 1-3 cm</td>
<td>EBM from perineum lesion</td>
<td>+ve</td>
<td>-ve</td>
</tr>
<tr>
<td>JPG-07</td>
<td>CCWT-87</td>
<td>NDHF, 2 Years</td>
<td>Cauliflower like warts on neck, fore limbs, back and belly, n=35, 3-6 cm</td>
<td>PBM from back lesion</td>
<td>+ve</td>
<td>-ve</td>
</tr>
<tr>
<td>JPG-10</td>
<td>CCWT-88</td>
<td>HLXHF, 3 Years</td>
<td>Non pedunculated warts on neck, shoulder and fore limbs, n=35, 3-6 cm</td>
<td>PBM from neck and fore limb lesion, n=15, 3-5 cm</td>
<td>+ve</td>
<td>-ve</td>
</tr>
<tr>
<td>CBR-06</td>
<td>CCWT-89</td>
<td>NDBK, 4 Years</td>
<td>Cauliflower like warts on fore limbs, back and barrel, n=35, 3-6 cm</td>
<td>EBM from barrel lesion</td>
<td>+ve</td>
<td>-ve</td>
</tr>
<tr>
<td>CBR-07</td>
<td>CCWT-90</td>
<td>NDBK, 4 Years</td>
<td>Cauliflower like warts on head, neck, arm pit and thigh, n=15, 3-4 cm</td>
<td>EBM from thigh lesion</td>
<td>+ve</td>
<td>-ve</td>
</tr>
<tr>
<td>KKT-08</td>
<td>CCWT-91</td>
<td>ND Cow, 6</td>
<td>Flank and belly</td>
<td>IBM from flank</td>
<td>-ve</td>
<td>-ve</td>
</tr>
</tbody>
</table>
### 4.4.2.7 BPV types circulating in Bengal based on PCR based assay

District wise prevalence of BPV types affecting cattle and buffalo as detected by PCR assays in both CWT and TWT samples including healthy cutaneous and teat skin samples of both the species has been presented in tables (Table-124-127).

#### Table-124: District wise prevalence of BPV types causing CCWT in Bengal based on PCR based detection

<table>
<thead>
<tr>
<th>Sl No</th>
<th>Name of the District</th>
<th>No of CCWT Samples tested</th>
<th>No of healthy skin Samples tested and prevalent BPV types</th>
<th>BPV-1</th>
<th>BPV-2</th>
<th>Mixed infection (BPV-1 &amp; BPV-2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Bankura(BKU)</td>
<td>n = 6</td>
<td>Nil</td>
<td>02</td>
<td>01</td>
<td>03</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(BKU-1,2, 4,6,8,19)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Birbhum(BBM)</td>
<td>n = 4</td>
<td>Nil</td>
<td>04</td>
<td>Nil</td>
<td>Nil</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(BBM -2,8,11,44)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Burdwan(BDN)</td>
<td>n = 7</td>
<td>Nil</td>
<td>01</td>
<td>03</td>
<td>03</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(BDN-1,6,7,9,12,15,21)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Purulia (PRL)</td>
<td>n = 03</td>
<td>Nil</td>
<td>01</td>
<td>01</td>
<td>01</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(PRL-3,6,16)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>West Midnapur (WMP)</td>
<td>n = 6</td>
<td>Nil</td>
<td>03</td>
<td>Nil</td>
<td>03</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(WMP-3,5,6,8,12,15)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>East Midnapur (EMP)</td>
<td>n = 6</td>
<td>Nil</td>
<td>04</td>
<td>Nil</td>
<td>02</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(EMP-1,5,6,8,10,15)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Howrah (HWH)</td>
<td>n = 5</td>
<td>n= 1, BPV (-) ve</td>
<td>02</td>
<td>01</td>
<td>02</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(HWH-3,4,5,32,37,)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Hooghly (HLY)</td>
<td>n = 6</td>
<td>n= 1, BPV (-) ve</td>
<td>01</td>
<td>03</td>
<td>02</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(HLY-1,3,13,15,18,23)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Murshidabad (MSD)</td>
<td>n = 5</td>
<td>n= 1, BPV (-) ve</td>
<td>01</td>
<td>01</td>
<td>03</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(MSD-1,4,6,8,10)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Nadia (NDA)</td>
<td>n = 7</td>
<td>n=7,BPV-2 (+) ve, n=3, Rest (-) ve</td>
<td>01</td>
<td>03</td>
<td>03</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(NDA-02,03,147,152,301,247)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Kolkata (KKT)</td>
<td>n = 5</td>
<td>n= 1, BPV (-) ve</td>
<td>02</td>
<td>01</td>
<td>02</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(KKT-10,11,15,24,37)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>North 24 Parganas (NTP)</td>
<td>n = 5</td>
<td>n= 1, BPV (-) ve</td>
<td>03</td>
<td>Nil</td>
<td>02</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(NTP-01,04,07,11,28)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>South 24 Parganas (STP)</td>
<td>n = 6</td>
<td>n=01, BPV (-) ve</td>
<td>02</td>
<td>01</td>
<td>03</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(STP-13,14,16,20,109,114)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>Coochbehar (CBR)</td>
<td>n = 4</td>
<td>n=01, BPV (-) ve</td>
<td>Nil</td>
<td>03</td>
<td>01</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(CBR-1,5,6,7)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>Darjeeling (DJG)</td>
<td>n = 4</td>
<td>n=01, BPV (-) ve</td>
<td>Nil</td>
<td>04</td>
<td>Nil</td>
</tr>
</tbody>
</table>

**Results**
Among the tested ninety three CCWT samples there were 31 numbers of BPV-1 positive cases, 29 numbers of BPV-2 positive cases and 33 numbers were positive for both the types or mixed infection (BPV-1&-2). The result reflects highest number of mixed type infection followed by BPV-1 and BPV-2 positive cases among the tested samples.

Table-125: District wise prevalence of BPV Types causing CTP in Bengal

<table>
<thead>
<tr>
<th>Sl No</th>
<th>Name of the District</th>
<th>No of CTP samples tested</th>
<th>No of healthy skin samples tested and prevalent BPV Types</th>
<th>BPV-1</th>
<th>BPV-2</th>
<th>Mixed infection (BPV-1 &amp; BPV-2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Bankura (BKU)</td>
<td>n = 1 (BKU-20)</td>
<td>Nil</td>
<td>Nil</td>
<td>Nil</td>
<td>Nil</td>
</tr>
<tr>
<td>2</td>
<td>Birbhum (BBM)</td>
<td>n = 02 (BBM-16,18)</td>
<td>Nil</td>
<td>01</td>
<td>Nil</td>
<td>Nil</td>
</tr>
<tr>
<td>3</td>
<td>Burdwan (BDN)</td>
<td>n = 03 (BDN-38,39)</td>
<td>Nil</td>
<td>02</td>
<td>Nil</td>
<td>Nil</td>
</tr>
<tr>
<td>4</td>
<td>Purulia (PRL)</td>
<td>n = 02 (PRL-7,18)</td>
<td>Nil</td>
<td>02</td>
<td>Nil</td>
<td>Nil</td>
</tr>
<tr>
<td>5</td>
<td>West Midnapur (WMP)</td>
<td>n = 02 (WMP-2,47)</td>
<td>Nil</td>
<td>01</td>
<td>Nil</td>
<td>Nil</td>
</tr>
<tr>
<td>6</td>
<td>East Midnapur (EMP)</td>
<td>n = 02 (EMP-41,46)</td>
<td>Nil</td>
<td>02</td>
<td>Nil</td>
<td>Nil</td>
</tr>
<tr>
<td>7</td>
<td>Howrah (HWH)</td>
<td>n = 2 (HWH-22,23)</td>
<td>n = 01, BPV (-)ve</td>
<td>01</td>
<td>Nil</td>
<td>01</td>
</tr>
<tr>
<td>8</td>
<td>Hooghly (HLY)</td>
<td>n = 2 (HLY-73,80)</td>
<td>Nil</td>
<td>01</td>
<td>Nil</td>
<td>01</td>
</tr>
<tr>
<td>9</td>
<td>Murshidabad (MSD)</td>
<td>n = 02 (MSD-16,24)</td>
<td>Nil</td>
<td>Nil</td>
<td>Nil</td>
<td>01</td>
</tr>
<tr>
<td>10</td>
<td>Nadia (NDA)</td>
<td>n = 04 (NDA-117,121,123,128)</td>
<td>Nil</td>
<td>02</td>
<td>01</td>
<td>Nil</td>
</tr>
<tr>
<td>11</td>
<td>Kolkata (KKT)</td>
<td>n = 01 (KKT-9)</td>
<td>n = 01, BPV (-)ve</td>
<td>Nil</td>
<td>Nil</td>
<td>Nil</td>
</tr>
<tr>
<td>12</td>
<td>North 24 Parganas (NTP)</td>
<td>n = 02 (NTP-61,65)</td>
<td>Nil</td>
<td>01</td>
<td>Nil</td>
<td>Nil</td>
</tr>
<tr>
<td>13</td>
<td>South 24 Parganas (STP)</td>
<td>n = 01 (STP-108)</td>
<td>Nil</td>
<td>01</td>
<td>Nil</td>
<td>Nil</td>
</tr>
<tr>
<td>14</td>
<td>Darjeeling (DJG)</td>
<td>n = 02</td>
<td>Nil</td>
<td>Nil</td>
<td>Nil</td>
<td>Nil</td>
</tr>
</tbody>
</table>
Among the tested thirty-two CTP samples including two healthy teat skin samples there were fifteen numbers of BPV-1 positive cases, three numbers of BPV-2 positive cases and five numbers were positive for both the types or mixed infection (BPV-1&-2). The result reflects highest number of BPV-1 infection followed by mixed type infection and BPV-2 positive cases. Healthy teat skin samples did not yield specific amplicon and were negative to BPV-1,-2, -5, -9 & -10.

Table-126: District wise prevalence of BPV types causing buffalo cutaneous wart (BCWT) in Bengal

<table>
<thead>
<tr>
<th>Sl No</th>
<th>Name of the District</th>
<th>No of BCWT samples tested</th>
<th>No of healthy skin samples tested and prevalent BPV Types</th>
<th>BPV-1</th>
<th>BPV-2</th>
<th>Mixed infection (BPV-1 &amp; BPV-2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Bankura (BKU)</td>
<td>n = 03 (BKU-3,35,36)</td>
<td>n = 01, BPV(-)ve</td>
<td>02</td>
<td>01</td>
<td>Nil</td>
</tr>
<tr>
<td>2</td>
<td>Birbhum (BBM)</td>
<td>n = 01 (BBM-14)</td>
<td>Nil</td>
<td>01</td>
<td>Nil</td>
<td>Nil</td>
</tr>
<tr>
<td>3</td>
<td>Burdwan (BDN)</td>
<td>n = 03 (BDN-29,39,50)</td>
<td>Nil</td>
<td>Nil</td>
<td>02</td>
<td>01</td>
</tr>
<tr>
<td>4</td>
<td>Murshidabad (MSD)</td>
<td>n = 01 (MSD-14)</td>
<td>Nil</td>
<td>01</td>
<td>Nil</td>
<td>Nil</td>
</tr>
<tr>
<td>5</td>
<td>Nadia (NDA)</td>
<td>n = 01 (NDA-59)</td>
<td>n = 02, BPV(-)ve</td>
<td>01</td>
<td>Nil</td>
<td>Nil</td>
</tr>
<tr>
<td>6</td>
<td>Kolkata (KKT)</td>
<td>n = 1 (KKT-3)</td>
<td>Nil</td>
<td>01</td>
<td>Nil</td>
<td>Nil</td>
</tr>
<tr>
<td>7</td>
<td>North 24 Parganas (NTP)</td>
<td>n = 04 (NTP-10,14,15,53)</td>
<td>n = 01, BPV(-)ve</td>
<td>Nil</td>
<td>02</td>
<td>02</td>
</tr>
<tr>
<td>8</td>
<td>Maldah (MDH)</td>
<td>n = 04 (MDH-3,9,17,27)</td>
<td>Nil</td>
<td>01</td>
<td>03</td>
<td>Nil</td>
</tr>
<tr>
<td></td>
<td>Total=8 Districts</td>
<td>n = 18</td>
<td>n = 4, All BPV(-)ve</td>
<td>07</td>
<td>08</td>
<td>3</td>
</tr>
</tbody>
</table>

Among the tested BCWT samples including healthy bubaline skin samples there were seven numbers of BPV-1 positive cases, eight numbers of BPV-2 positive cases and three numbers were positive for both the types or mixed type infection (i.e. BPV-1&-2). The result reflects highest number of BPV-2 infection followed by BPV-1 and mixed type infection.
Table-127: District wise prevalence of BPV types causing buffalo teatwart (BCWT) in Bengal

<table>
<thead>
<tr>
<th>Sl No</th>
<th>Name of the District</th>
<th>No of BTWT /BTP samples tested</th>
<th>No of healthy skin samples tested and prevalent BPV Types</th>
<th>BPV-1</th>
<th>BPV-2</th>
<th>Mixed infection (BPV-1 &amp; BPV-2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Bankura (BKU)</td>
<td>n = 03 (BKU-7,21,23)</td>
<td>Nil</td>
<td>02</td>
<td>01</td>
<td>Nil</td>
</tr>
<tr>
<td>2</td>
<td>Birbhum (BBM)</td>
<td>n = 03 (BBM-17,27,42)</td>
<td>01, BPV (-) ve</td>
<td>Nil</td>
<td>02</td>
<td>Nil</td>
</tr>
<tr>
<td>3</td>
<td>Howrah (HWH)</td>
<td>n = 01 (HWH-16)</td>
<td>Nil</td>
<td>01</td>
<td>Nil</td>
<td>Nil</td>
</tr>
<tr>
<td>4</td>
<td>Nadia (NDA)</td>
<td>n = 02 (NDA-48,148)</td>
<td>02, BPV (-) ve</td>
<td>02</td>
<td>Nil</td>
<td>Nil</td>
</tr>
<tr>
<td>5</td>
<td>Kolkata (KKT)</td>
<td>n = 01 (KKT-7)</td>
<td>Nil</td>
<td>01</td>
<td>Nil</td>
<td>Nil</td>
</tr>
<tr>
<td>6</td>
<td>North 24 Parganas (NTP)</td>
<td>n = 04 (NTP-2,5,8,17)</td>
<td>01, BPV (-) ve</td>
<td>Nil</td>
<td>02</td>
<td>Nil</td>
</tr>
<tr>
<td>7</td>
<td>Maldah (MDH)</td>
<td>n = 02 (MDH-6,14)</td>
<td>Nil</td>
<td>01</td>
<td>01</td>
<td>Nil</td>
</tr>
<tr>
<td></td>
<td>Total=7 Districts</td>
<td>n = 16</td>
<td>04, All BPV (-) ve</td>
<td>07</td>
<td>06</td>
<td>Nil</td>
</tr>
</tbody>
</table>

Among the tested BTP samples including healthy teat skin samples there were seven numbers of BPV-1 positive cases, six numbers of BPV-2 positive cases and no mixed infection (BPV-1&-2) or positive case was detected. The result reflects highest number of BPV-1 infection followed by BPV-2 positive cases. In Birbhum and North 24 Pargana districts there were presence of only BPV-2 type and in Howrah and Kolkata BPV-1 was fund to be the prevalent BPV type. Both BPV-1 and BPV-2 were circulating in Bankura and Maldaha districts. Gel electrophoresis showed the specific product size of 301 and 165bp for BPV-1 &-2, respectively in CCWT and BCWT samples (Figure-56-59). PCR products of representative samples found positive for BPV-1 & -2, were purified and sequenced which revealed that the sequences generated in the present study had homology with earlier published sequences from India.

4.4.2.8 Cloning of PCR amplicons

The restriction endonuclease analysis with EcoR1 of recombinant plasmids harvested from recombinant clones carrying inserts from L1 regions of both BPV-1 and BPV-2 revealed successful cloning of desired PCR amplicons. 0.8% agarose gel electrophoresis of the EcoR1 digested recombinant plasmid from respective recombinant clones and control PCR amplicons from the same region of comparision (Figure 60-C&D, Figure-61,A-D).
4.4.2.9 Sequencing of PCR amplicons

The partial nucleotide sequence of L1 gene PCR amplicons of both BPV-1 and BPV-2 were ascertained by the T7 sequencing on a commercial ABI PRISM dye terminator sequencing system and the sequenced data generated was received as coloured electropherograms and text files.

**BPV1 sequences**

BPV-1 Primer; Forward: GGAGCGCCTGCTAACTATAGGA (22) and Reverse: ATCTGTTGTGGTGTTGGTAC (21); Comp-reverse GTCACCACCCAAAAACAGAT

Product size: 301 bp (BPV-1, L1 partial sequence, WB cattle origin)

GGAGCGCCTGCTAACTATAGGACATCCATATTACCAGTGCTATCGGCGCAAAACTGGTT
CCTAAGGTCTCTGCTAATCAATTTAGGGTTTTAAAAATCCAAACTACCTGACTCATACTCAGGTGATTG
CCTGATAAAACCGTTCAATCAACAAGCAAGAGGCGCTTGGGCTGAGTAAATAGGACTACAGGTCTGC
CCGAGGTCAACCTCTGGAGGAAACAAGTTACCGGGCGACCCCCATTTATAATGCCTTGTGATGCAGAAA
ATGTAAATAGGAAAAGTCAACCACCCAAAAACAGAT

>BPV2 sequences: 165 bp (BPV-2, L1 partial sequence, WB cattle origin)

F-GTTATACCACCCAAAAAGAAGACCT, CF- AGGGTCTTCTTTGGGTGGTATAAC
R-CTGTTGCAACAGCTCTCTTTTCTC, CR-GAGAAAAGAGAGCTGTGTTGCAACCAG

GTTATACCACCCAAAAAGAAGACCTATATGCAGGCGCTTAAGTTTTGGAGCATAGACTTAAAAGAAAAGC
TGTCTTTGGACTTAGATCTAAATTCCCTTGGGGAAGAAGATCTCTAGCCAGCAAGGGCGAGGTCTGTC
AACTGTGAGAAAGAGAGCTGTGTTGCAACCAG

>BPV2 sequences: 165 bp (BPV-2, L1 partial sequence, WB buffalo origin)

Partial sequence of BPV-2L1 cloned product including vector sequence

CGTAATCATGGTCTAGCTTCTTTCCATGTTGGAATTGTTATCCGCTCAACTCCACAAACACTACGA
GCCGGAAGCATAAAGTTGAACGCTGCTTAGAATGTCTGAGCTAATCTCACATATTGGCGGTG
GCTCAGTGGCCGCTTTCCAGCGCACCGAAACTGTGCTGCGCCGACTTAATGAAATCGGGCAACCGCG
GGGAGAGGCCTCGTGTGCGGAAGCA

Partial sequence of BPV-2L1 of buffalo origin (WB)

GTTATACCACCCAAAAAGAAGACCTATATGCAGGCGCTTAAGTTTTGGAGCATAGACTTAAAAGAAAAGC
TGTCTTTGGACTTAGATCTAAATTCCCTTGGGGAAGAAGATCTCTAGCCAGCAAGGGCGAGGTCTGTC
AACTGTGAGAAAGAGAGCTGTGTTGCAACCAG

4.4.2.10 Sequence alignment of BPV types

>BPV2_CATTLE
GTTATCCACCAAGAAGACCTTATTGAGCAGCATAGACCTAACAAAAGAAAGC
TGTCTTTGGACTTAGATCAATTTCCTTGGGAGAAGATCTATTAGCAGAAGGGGAGGATGTTT
AACGTGTGAAAGAAGCGAGCTGGCAAGAC

4.4.2.10.1 BPV-2 L1: Clustal L1 partial sequence alignment

As shown in the following figure (Figure-62) the region of 1300 to 1450 base pair of BPV-2 L1 gene of India (published sequence of Indian origin) except WB showed some sequence diversity. Hence a primer was designed to amplify from 1312 to 1427 of the isolate of WB. The PCR using this primer forward and reverse genome amplified 165 bp amplified fragment (Fig-56-B & D, 57-B & C, 58-A, B, C & D) and produced perfect band (165bp) with exact product size. This gel band was excised and cloned into pGEM-T easy vector (Promega Pgem-T Easy Vector System, Promega, Madison, USA) and transformed into competent E. coli cells. The positive clone was cleaned and bi-directionally sequenced using the T 7, SP 6 primers (standard primers). The sequence data was analysed by blasting with public database (NCBI home page). It was detected to be the L 1 region of BPV-2. The figure (Figure-62) showed the alignment.

**Figure-62**

<table>
<thead>
<tr>
<th>BPV2.L1.India</th>
<th>ATGGCGTTGTGGCAACAAGCCAAAGCTGTATCTCTCTTTGCTAGAATCAGAGTTG 60</th>
</tr>
</thead>
<tbody>
<tr>
<td>BPV2.L1.WB</td>
<td>-------------------------------------------------------------</td>
</tr>
<tr>
<td>BPV2.L1.India</td>
<td>CATCGTGAAACCTATGCTGAAAGAAAAAGCATATTTCTATGCAAGAAGGGGAACGC 120</td>
</tr>
<tr>
<td>BPV2.L1.WB</td>
<td>-------------------------------------------------------------</td>
</tr>
<tr>
<td>BPV2.L1.India</td>
<td>CTGGTAATCTTGGACATCTACATATCCAAAGCTCTCTGCTCGGACAAAACTGTTCCCTAA 180</td>
</tr>
<tr>
<td>BPV2.L1.WB</td>
<td>-------------------------------------------------------------</td>
</tr>
<tr>
<td>BPV2.L1.India</td>
<td>GTGGTCTGATCTAATCTTTAGGTTTTTAAAATACAGCTCCCCTGATCCCAATCTGGTTCCA 240</td>
</tr>
<tr>
<td>BPV2.L1.WB</td>
<td>-------------------------------------------------------------</td>
</tr>
<tr>
<td>BPV2.L1.India</td>
<td>TGGGCTAGATAGACTGCGACAAATCCAAAGGCGGCACTCTGTTGCTGTAATAGGG 300</td>
</tr>
<tr>
<td>BPV2.L1.WB</td>
<td>-------------------------------------------------------------</td>
</tr>
<tr>
<td>BPV2.L1.India</td>
<td>GCCTTGCTTGATGAGAAATGTAAATAGAAATTTACTGCAAGAAACAAGGAGACG 420</td>
</tr>
<tr>
<td>BPV2.L1.WB</td>
<td>-------------------------------------------------------------</td>
</tr>
<tr>
<td>BPV2.L1.India</td>
<td>AAGCCAAACAGGATTAGATGCTAAAGCACCAACAGGTTCCTGCTGGGCTGATCCCTGCAGA 480</td>
</tr>
<tr>
<td>BPV2.L1.WB</td>
<td>-------------------------------------------------------------</td>
</tr>
<tr>
<td>BPV2.L1.India</td>
<td>GAAGGGGAATCTGTGACCAACACCAATCCCTAGTTCCTACTGAGCTGAGAGTTGCACGTG 540</td>
</tr>
<tr>
<td>BPV2.L1.WB</td>
<td>-------------------------------------------------------------</td>
</tr>
<tr>
<td>BPV2.L1.India</td>
<td>TGCTCTCTCTCAGATAGAATGAAATGCTGAGGAGCTGAGAGTTGAGGAGGAAATAGGG 600</td>
</tr>
<tr>
<td>BPV2.L1.WB</td>
<td>-------------------------------------------------------------</td>
</tr>
<tr>
<td>BPV2.L1.India</td>
<td>TTGGTGTGCTGTGCGTTTAAATACACTTGAAGATGGCGAGGAGATGGAAAAATAGGG 660</td>
</tr>
<tr>
<td>BPV2.L1.WB</td>
<td>-------------------------------------------------------------</td>
</tr>
<tr>
<td>BPV2.L1.India</td>
<td>CAAATAGAATATCCCTGATCCAGACTCCCTCAAAATGCGAGATGCTGCTGGAACAC 720</td>
</tr>
<tr>
<td>BPV2.L1.WB</td>
<td>-------------------------------------------------------------</td>
</tr>
<tr>
<td>BPV2.L1.India</td>
<td>AGTATGGCTCTCTCTGCGAGAAGAAAAAGGACAGGTAAGGCGGATATGGAAGGGGAGG 780</td>
</tr>
<tr>
<td>BPV2.L1.WB</td>
<td>-------------------------------------------------------------</td>
</tr>
<tr>
<td>BPV2.L1.India</td>
<td>GGCTCTGAAAAGAAGCGACCCAGTAAAGAGATCCCTCTACCTCCCAAAATGTTGAGGTAAGAAA 840</td>
</tr>
<tr>
<td>BPV2.L1.WB</td>
<td>-------------------------------------------------------------</td>
</tr>
<tr>
<td>BPV2.L1.India</td>
<td>ACTCTAAAATACCTAGGTGCGACTTTTTGCGAGGCGTTCCCAGTCTGATCCTGAT 900</td>
</tr>
</tbody>
</table>

Results | 330
BPV2.L1.WB------------------------------------------------------------
BPV2.L1.India       AATCAAATATTTAACAGGCCTTATTGGCTATTCAGGGCTCAGGGCATGAACAATGGGATT 960
BPV2.L1.WB          ------------------------------------------------------------
BPV2.L1.India       GCATGGAATAATTTATTATTTTTAACTGTAGGGGATAACACACGGGGAACTAATCTTAGT 1020
BPV2.L1.WB          ------------------------------------------------------------
BPV2.L1.India       ATTAGTGTAGCTGCAGATGGAAACGCATTGTCAGAGTATGATACTGGCAAATTTAACCTA 1080
BPV2.L1.WB          ------------------------------------------------------------
BPV2.L1.India     TACCATAGGCATATGGAAGAATATAAGCTAGCATTTATATTGGAGCTGTGCTCTGTTGAG 1140
BPV2.L1.WB          ------------------------------------------------------------
BPV2.L1.India       ATTACTGCACAAACACTGTCACATCTGCAAGGACTGATGCCCTCTGTGCTACAAAACTGG 1200
BPV2.L1.WB          ------------------------------------------------------------
BPV2.L1.India       GAAATCGGGGTGCAACCTCCTGCTTCTCTATTTTGAGAAGATCTTTATAGGTACATAGAG 1260
BPV2.L1.WB          ------------------------------------------------------------
BPV2.L1.India       TCTCCTGCAACTAAATGTGCAAGTAATGTTATACCACCAAGAAGAAGCCCTATATGCAGGG 1320
********
BPV2.L1.WB      ---------------------------------------------------TATGCAGGC 9
********
BPV2.L1.India       CTTAAGTTTTGAGCACTAGACCTAAAAAGAAAAGCTGCTTCTTGAGGCGACTGATCAGAAAATCT 1380
BPV2.L1.WB          ------------------------------------------------------------
BPV2.L1.India       TTGGGAAGAAGATTCTTAGCTCAGCAAGGGGCAGGATGTTCAAGTGGAGAGACCT 1440
BPV-2, L1, WBTTGGGAAGAAGATTCTTAGCTCAGCAAGGGGCAGGATGTTCAAGTGGAGAGACCT 116
**********************************************
BPV2.L1.India       GTTGCAACCAGAAATTCCATGTAAGCCTGCAAAAAGAAAAAAAATCAAAGCTTAA 1494
BPV2.L1.WB------------------------------------------------------

The WB isolate of BPV-2, L1 showed the sequence divergence at position 9 corresponding to 1320 of Indian type (BPV-2, L1) and 60bp corresponding to 1371. While rest of the sequence (base pairs) showed homology with the Indian type. This clearly indicates that there was sequence variation with the Indian type as compared to WB type.

4.4.2.10.2 BPV-2, L1 partial sequence (WB) alignment with published sequences of BPV-2, L1 of Indian origin

The following accession numbers and the sequences thereon were used for the alignment study.

(#BPV_Type_2(WB),#BPV_type_2_SP7_L1(HQ144255.1),#BPV_type_2_L1_protein_(GQ369514.1),#BPV_type_2_SP5_L1(HQ144254.1),#BPV_type_2_E6+E7+E1+E8+.._(M20219.1),#BPV_type_2_L1(EF151532.1),#BPV_type_1_(J02045.1))

Alignment of partial sequence of BPV-2, L1 with published sequences of BPV-2, L1 protein of Indian origin (as described in the text) revealed only two SNP or mismatch at 36 position (A to G) and at 82 position (T to C) (Annexure-1) and phylogenetic analysis showed that BPV2, L2 protein of WB origin formed one cluster with all the published BPV2, L2 protein types of Indian origin with 98% of homology and or similarity.

4.4.2.10.3 Alignment BPV-2 L1 partial sequence (WB) with published sequences of BPV-2 L1 and BPV type-1 of Indian origin

#MEGA
!Title 1;
!Format
DataType=Nucleotide CodeTable=Standard
NSeqs=7 NSites=165
Identical=. Missing=? Indel=-;
!Domain=Data property=Coding CodonStart=1;
[
111 111 111 122 222 222 223
333 ]
[
123 456 789 012 345 678 901 234 567 890
789 ]
#BPV_Type_2(WB)
GTT ATA CCA CCC AAA GAA GAC CCT TAT GCA
AAG
#BPV_type_2_SP7_L1 (HQ144255.1)
... ... ... ... ... ... ... ... ... ...
...
#BPV_type_2_L1_protein_(GQ369514.1)
--. ... ... ... ... ... ... ... ... ...
...
#BPV_type_2_SP5_L1(HQ144254.1)
... ... ... ... ... ... ... ... ... ...
...
#BPV_type_2_E6+E7+E1+E8+.(M20219.1) ... ... ... ... ... ... ... ... ... ...
...
#BPV_type_2_L1(EF151532.1)
--- --- --- --- --- --- --- --- --- --...
#BPV_type_1(J02045.1)
..A ..T ..T G.A ... ... ... ... ... ...
...
[
777 ]
[
678 ]
#BPV_Type_2(WB)
GAC
#BPV_type_2_SP7_L1(HQ144255.1)
...
#BPV_type_2_L1_protein_(GQ369514.1)
...
#BPV_type_2_SP5_L1(HQ144254.1)
...
#BPV_type_2_E6+E7+E1+E8+.._(M20219.1)
...
#BPV_type_2_L1(EF151532.1)
...
#BPV_type_1_(J02045.1)
...
[
111 ]
[
111 ]
[
567 ]
#BPV_Type_2(WB)
CAG
#BPV_type_2_SP7_L1(HQ144255.1)
...
#BPV_type_2_L1_protein_(GQ369514.1)
...
#BPV_type_2_SP5_L1(HQ144254.1)
...
#BPV_type_2_E6+E7+E1+E8+.._(M20219.1)
...
#BPV_type_2_L1(EF151532.1)
...
#BPV_type_1_(J02045.1)
...
[
111 ]
[
555 ]
[
456 ]

333 333
123 456
GGC CTT
... ...
... ...
... ...
..G ...
--- --.
..G T..

444 444 444 455 555 555 556 666 666 666 777 777
012 345 678 901 234 567 890 123 456 789 012 345
TTT TGG AGC ATA GAC TTA AAA GAA AAG CTG TCT TTG
... ... ... ... ... ... ... ... ... ... ... ...
... ... ... ... ... ... ... ... ... ... ... ...
... .C. ... ... ... ... ..G ... ... ... ... ...
... ... ... ... ... ... ... ... ... ... ... ...
... ... ... ... ... ... ... ... ... ... ... ...
... ... .A. ... ..T C.T ... ... ... ..T ... ...

111 111 111 111 111
788 888 888 889 999 999 999 000 000 000 011 111
901 234 567 890 123 456 789 012 345 678 901 234
TTA CAT CAA TTT CCC TTG GGA AGA AGA TTC TTA GCT
... G.. ... ... ... ... ... ... ... ... ... ...
... G.. ... ... ... ... ... ... ... ... ... ...
... G.. ... ... ... ... ... ... ... ... ... ...
... G.C ... ... ... ... ... ... ... ... ... ...
... G.. ... ... ... ... ... ... ... ... ... ...
... G.. ... ... ... ... ... ... ... ..T ... ..A

111 111 111 111 111 111 111 111 111 111 111 111
112 222 222 222 333 333 333 344 444 444 445 555
890 123 456 789 012 345 678 901 234 567 890 123

Results | 332


4.4.2.10.4 BPV-1, L1 WB Alignment with BPV-2, L1 WB

Alignment of partial sequence of BPV-2 L1 (WB) with the partial sequence of BPV-1 L1 of WB origin revealed 76 SNP or mismatch at marked positions in the alignment figure.
Whereas alignment of partial sequence of BPV-1 L1 (WB) with the partial sequence of BPV-1 L1 of Indian origin revealed 83 SNP or mismatch at marked positions as revealed in the alignment study (Annexure-2).

4.4.2.10.5: BPV-1 and BPV-2, L1 (WB origin) Percent Identity/ nucleotide similarity and divergence as compared to the published sequences of BPV-1 & -2, L1 types from India

Following accession numbers were used for the study of percent nucleotide similarity and divergence between BPV-1 and BPV-2, WB as compared to the published sequence of BPV-1 and -2 type of Indian origin targeting L1 gene. For BPV-1, L1 viz Figure-63 the accession numbers in bracket were used (BPV-1, L1: BPV-1 proviral partial L1 gene for capsid protein L1, isolate PKC-16, Accession No. HE603636; BPV-1 proviral partial L1 gene for capsid protein L1, buffalo isolate PKC-17, Accession No. HE603635; BPV-1 proviral partial L1 gene for capsid protein L1, yak isolate PKC-24, Accession No. HE603637; BPV-1 proviral partial L1 gene for capsid protein L1, yak isolate PKC-25, Accession No. HE603638 254028606 and standard sequence of BPV-2, L1 vide Accesssion No. J02045.1) and for BPV type-2 L1 gene, viz figure-64 the accession numbers in bracket were taken into consideration (BPV-2, L1: BPV-2 from EBH cattle from India L1 protein gene, partial cds 163 bp linear DNA, accession No. GQ369514.1, GI: 254028612; BPV type-2 from cattle from India L1 protein gene, partial cds 163 bp linear DNA, accession No. GQ369513.1, GI: 254028610; BPV type-2 from cattle from India L1 protein gene, partial cds 163 bp linear DNA, accession No. GQ369512.1, GI: 254028608; BPV type-2 from buffalo from India L1 protein gene, partial cds 163 bp linear DNA, accession No. GQ369511.1, GI: 254028606 and standard sequence of BPV-2, SP7, L1 gene vide Accesssion No.HQ144255.1). Analysis of sequences were made using EDITSEQ and MEG ALIGN modules of LASERGENE software (DNASTAR). The published and sequenced data were aligned by the clustal method. Wherever necessary, the nucleotide sequences were truncated to 301 bp and 165 bplengths for L1 region of BPV-1 and BPV-2 respectively. The standard nucleotide alignment output and percent similarity and divergence values based on nucleotide sequence similarities were obtained using MEG ALIGN module as shown in figure (Figure-63 &-64) and 99.87% and 99.987% similarity was seen in BPV 1 and BPV 2 sequence as compared to published standard sequence.
4.4.2.10.7 Phylogenetic analysis of the sequences

Alignment of the partial nucleotide sequence of BPV-2 L1, WB of both cattle and buffalo revealed 100% homology and 98% homology in the genome sequences as compared to the published sequences of BPV-2, L1 of Indian origin. In the partial nucleotide sequence of BPV-2, L1 (WB), there were few alterations (A to G) and (T to C) at 36th and 82nd positions respectively as compared to published sequences of BPV-2, L1 (Indian origin) and accordingly the resultant aminoacid sequence was found different with change in aminoacid at those positions. Phylogenetic tree as constructed with BPV-1, L1 (WB) with those of the published sequences of Indian origin forming two different clads. BPV-1, L1 (WB) has distant phylogenetic lineage with that of BPV-1, L1 of UP origin (Figure-65). Phylogenetic tree that was constructed with BPV-1, L1 and BPV-2, L1 of cattle and buffalo (WB) with those of BPV-1, L1 and BPV-2, L1 and E proteins made two different clads. BPV-2, L1 of cattle and buffalo (WB origin) had 99% similarity and had 74% similarity with that of BPV-2, L1 of Indian origin. Whereas in BPV-1, L1 WB origin forming different clad with those of the published sequences of BPV-1, E proteins giving rise to 80% similarity with the WB type (Figure-66)
4.4.2.10.7.1 Phylogenetic analysis of the sequences: BPV-1(L1) gene-nucleotide seq-
Neighbour joining/Phylogenetic tree formation

Phylogenetic tree was constructed with BPV-1 and BPV-2 L1 (ORF) sequences of
West Bengal origin along with BPV-1 and BPV-2 L1 (ORF) sequences of UP and UK. At
first, these sequences were aligned using CLUSTAL X multiple alignment programs (version
1.83). Phylogenetic analysis BPV-1 L1 ORF WB with published sequences of BPV-1 L1,
Indian origin showed close lineage. Phylogenetic tree as constructed with BPV-1, L1 partial
sequence of WB origin with the published partial sequence of BPV-1, L1 Indian origin (PKC-
16, HE603636, BPV-1 in ear CWT in a heifer, proviral partial L1 gene for capsid protein L1;
PKC-25, HE603638, BPV-1 in skin wart of a yak, BPV-1 proviral partial L1 gene for capsid
protein L1; PKC-17, HE603635, BPV-1 CWT in buffalo heifer, BPV-1 proviral partial L1
gene for capsid protein L1; PKC-24, HE603637, BPV-1 in skin wart of a yak, BPV-1
proviral partial L1 gene for capsid protein L1) and BPV type-1 (J07045.1), revealed two
distinct clusters/clads showing varying phylogenetic lineage. BPV-1, L1 WB formed a clad
with BPV-1 L1 type (J07045.1) and PKC-16 showing relatedness in phylogenetic path and
others (PKC 17, 24 & 25) formed a separate clad showing distant phylogenetic lineage. PKC-
17 and PKC-24 formed a separate clad indicating close phylogenetic lineage between them
and PKC-25 reflecting somewhat distant lineage. The phylogenetic analysis clearly depict
that the BPV-1, L1, WB type although had close lineage with standard BPV-1, L1 type and
Indian type (PKC-16), it had distant lineage with other BPV-1, L1 Indian types (PKC17, 24 &
25).

![Phylogenetic Tree](image)

**Figure -65:** BPV-1(L1) gene-nucleotide seq-Neighbour joining with the
published sequences of BPV-1, L1 of Indian origin showing the Phylogenetic
lineage
BPV-2(L1) gene-nucleotide seq-Neighbour joining/Phylogenetic tree as constructed with BPV-2(L1) gene partial nucleotide sequences of cattle and buffalo, WB origin and six other published BPV-2(L1) gene partial nucleotide sequences of cattle and buffalo origin formed two distinct clads, where BPV-2, L1WB origin of both cattle and buffalo belonged to same clad with those of five published sequences of cattle (3) and buffalo(2) : (GQ369512.1, GQ369513.1, GQ369514.1, cattle : GQ369510.1 and GQ369511.1 buffalo, HQ144255). This depicts the close lineage of BPV-2, L1, WB with published BPV-2, L1 of Indian origin and it has distant lineage with standard published sequence of BPV-2, L1.

Phylogenetic study of BPV-2(WB) L1 gene-nucleotide sequence neighbour joining with five published sequenes of BPV-2, L1 Indian origin and BPV-1, L1 , formed a phylogenetic tree that revealed formation of two separate cluster between BPV-1, L1 and BPV-2, L1. As shown in figure (Figure-67), BPV-2, L1 WB clustered with five other BPV-2, L1 ( gene sequences of UP and UK origin) and presented three separate clads showing lineage among them revealing 48%, 42% and 61% homology respectively whereas BPV-1,L1 did not form cluster with the BPV-2, L1 types showing distant lineage.

Figure -66: BPV-2(L1) gene-nucleotide seq-Neighbour joining/Phylogenetic tree (BPV-2, L1 partial sequence, WB origin of both cattle and buffalo with BPV-2, L1 partial sequences of Indian origin) showing the Phylogenetic lineage

Figure-67: BPV-2(WB) L1 gene-nucleotide sequence/Neighbour joining with BPV-2, L1 Indian origin and standard sequence of BPV-1, L1 (J02045.1) showing phylogenetic lineage
Figure-68: BPV-1& BPV-2-L1 gene- partial nucleotide sequence (WB) neighbour joining with the published partial nucleotide sequences of BPV-1, L1 and BPV-2, L1, of Indian origin (UPGMA) showing phylogenetic lineage

On the other hand, the phylogenetic tree as constructed with BPV-1& BPV-2, partial L1 gene-nucleotide sequences of WB origin by neighbour joining with the published partial sequences of L1 gene of both BPV types (BPV-1, L1: Accession No. PKC-16, HE603636; PKC-25, HE603638; PKC-17, HE603635 and BPV-2, L1: Accession No. GQ369512.1, GQ369513.1; GQ369514.1, cattle and GQ369510.1 and GQ369511.1 buffalo) formed two distinct clads showing close lineage as compared to the published sequences of Indian origin (Figure-68).

Figure-69: BPV-1& BPV-2-L1 gene partial nucleotide sequence (WB type) neighbour joining with partial nucleotide sequences of BPV1, L1 (Indian origin) showing phylogenetic lineage (UPGMA)
Phylogenetic tree was constructed with BPV-1 L1 and BPV-2 L1 partial sequences of West Bengal origin along with published four BPV1, L1 partial sequence of Indian origin. Phylogenetic analysis showed that BPV1 L1 protein of WB origin formed one cluster with all the published BPV-1 L1 gene of Indian origin showing close lineage (Figure 69), whereas BPV-2, L1 partial sequence (WB) belonged to the separate clad showing distant lineage.

Figure-70: BPV1-Phylogenetic Tree-L1 & E Protein: showing phylogenetic lineage of BPV-1, L1 WB type with two BPV-1, E proteins and one BPV-1, L1, Indian origin

Phylogenetic study as represented through figure-70 (BPV-1 phylogenetic tree L1 & Eprotein) revealed that BPV type-1, L1, WB origin and BPV type-1, E proteins of Indian origin formed two separate clad showing distant phylogenetic lineage. BPV-1, L1 WB origin formed separate clad where as published sequences of BPV-1, E proteins belonged to same clad.

5. Therapeutic management of BOCP and BUCP including CTP and BTP

5.1 Surgical management of cutaneous papillomatosis

5.1.1 Result on treatment Regimen-1 (Surgical excision under 2% Xylocaine administration and thermo-cautery for the management of cutaneous papillomatosis)

All twenty animals responded well to the treatment and recovered clinically. Lesions completely disappeared by 2nd week of therapy. Warts inflicted animals (n = 20) those undergone surgical excision under 2% Xylocaine at stalk followed by thermocautery, required 15-21 days for complete healing. Post operatively antibiotics were given for 3-5 days to avoid secondary bacterial infection and wounds were cleaned and dressings were done. Recurrence of warts and or no neo formations occurred during six months post surgical observance except in one heifer where neo formations occurred at the site of clustered lesions, excised surgically.

5.1.2. Result on treatment Regimen-2(surgical excision under 2% Xylazine sedation and potassium permanganate cauterization)

Result of surgical excision under 2% Xylazine sedation and potassium permanganate cauterization: All twenty animals under this treatment regime (Regim-2) responded well
without showing any adverse reaction. No recurrence or neo formations occurred in treated animals. Antibiotic therapy was not required in the treated animals. Healing of wounds occurred within ten to fifteen days only. Local application of ayurvedic multipurpose gel (Himax ointment) or wound spray was done which prevented problems with flies and hastened healing.

5.1.3. Regimen-3: Curettage of warts followed by trichloro-acetic acid application locally and S/C administration of Levamisole

All twenty animals responded well to this treatment regimen. Animals required 15-30 days for complete clinical cure. Warts regressed or bio absorbed at the site or sloughed up leaving scars. No adverse reaction was noted other than maggotization in one animal. It was interesting to note that curettage of major outgrowths caused the other peripheral lesions to regress. No recurrence and or neo formations were noted in the treatment group.

5.1.4. Cryotherapy for cutaneous papillomatosis

Result: Complete clinical recovery was observed in all twenty animals. The lesions were resolved either with one (n = 6) or two sittings/applications (n = 9) of liquid nitrogen therapy. Whereas in rest of the treated animals (n = 5), having sessile type warts required three applications. The papillomas or warts cryo-frozen to -20°C showed progressive reduction in size became blackish and latter it got resolved at the site within 2-5 days of cryotherapy. No haemorrhage and gross damage of healthy tissues were observed. Sloughing of necrosed tissue was completed within 5-10 days. Healing occurred in two weeks. During the follow up observations of cryotherapy to multiple papillomatous growths, it was interesting to note that freezing a few of the papillomatous lesions caused the other peripheral lesions to regress.

5.2 Homeopathic remedy for Bovine and bubaline papillomatosis

5.2.1 Effect of Thuja mother tincture per os (n = 30): Thuza mother tincture along with sulphur as tried in thirty animals bearing wart like excrescences on external surface of the body either bearing pedunculated (stalked) structure or broad based (sessile) outgrowth, demonstrated a good result as shown in the table (Table-128, Figure-71, A &B). Little or no reduction in size of papilloma was observed at first two week of treatment in the treated group, except in two cases there was little clinical alteration or reduction in size. From the fourth week onward, the smaller papillomatous nodule or miniature size sessile and pedunculated warts started drying with gradual reduction in size. The smaller papillomas started shedding, leaving hairless areas at the end of sixth week and complete regression was of course noted in one animal at DPT 45 (Figure-71, B). At the end of 10th week (at DPT-75) there was complete clinical cure in seventeen animals and moderate regression in eight animals. Large warts were not completely cured but these large warts showed indication of necrosis and were in the process of falling. At DPT -90, another five animals recovered and in
four animals although there was falling of warts and growth regression, there was no complete clinical cure. Five animals did not respond to this mode of treatment. Overall recovery or rate of complete clinical cure at DPT 90 was 70% (21/30) and overall response to treatment was 83.33% (25/30). Growth recurrence and or intermediate neo-formation was not observed within three months of recovery. In control group of animals there was both increase in size and number of lesions. Diminution and desiccation of few lesions were observed in two cases. Microscopic examination of regressive papilloma collected at sixth week onwards revealed changes simulating cellular necrosis.
Table- 128: Effect of Thuja oral therapy (Thuja mother tincture) on cutaneous and teat papillomatosis

<table>
<thead>
<tr>
<th>Sl No</th>
<th>Animal I/D</th>
<th>Animal details (Breed, age, sex)</th>
<th>Distribution of wart/site/location</th>
<th>No of warts</th>
<th>Size</th>
<th>Recovery status /Response to Thuja mother tincture by oral route</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>DPT-15</td>
</tr>
<tr>
<td>1</td>
<td>BDN-01</td>
<td>CBJ HF, 2 Years</td>
<td>Cauliflower like warts on both sides of the neck</td>
<td>n = 9</td>
<td>2-4 cm</td>
<td>No alteration</td>
</tr>
<tr>
<td>2</td>
<td>BDN-3</td>
<td>ND MC, 10 Months</td>
<td>Cauliflower like warts on peri-orbital region</td>
<td>n = 8</td>
<td>2.5-4 cm</td>
<td>Stable and no neo-formation</td>
</tr>
<tr>
<td>3</td>
<td>BDN-8</td>
<td>Zebu bull calf, 1.5 Years</td>
<td>Cauliflower like warts on tail base and at peri-anal region</td>
<td>n = 12</td>
<td>1-2 cm</td>
<td>No alteration</td>
</tr>
<tr>
<td>4</td>
<td>BDN-11</td>
<td>ND MC, 12 Months</td>
<td>Round, dome shaped warts on ear pinnae</td>
<td>n = 9</td>
<td>1-2 cm</td>
<td>No clinical alteration</td>
</tr>
<tr>
<td>5</td>
<td>BDN-15</td>
<td>ND HF, 2.5 Years</td>
<td>Sessile type para-genital warts</td>
<td>n = 7</td>
<td>2-3.5 cm</td>
<td>No clinical alteration</td>
</tr>
<tr>
<td>6</td>
<td>BDN-18</td>
<td>CBJ HF, 2 Years</td>
<td>Nodular warts on ears and around the eyes</td>
<td>n = 21</td>
<td>1-2 cm</td>
<td>No clinical alteration</td>
</tr>
<tr>
<td>7</td>
<td>BDN-19</td>
<td>ND FC, 9 Months</td>
<td>Nodular warts around the eyes</td>
<td>n = 8</td>
<td>1-3 cm</td>
<td>No clinical alteration</td>
</tr>
<tr>
<td>8</td>
<td>BDN-23</td>
<td>Gir HF, 18 Months</td>
<td>Cauliflower like warts on ear base, eyes and neck</td>
<td>n = 25</td>
<td>1-3 cm</td>
<td>No clinical alteration</td>
</tr>
<tr>
<td>9</td>
<td>BDN-24</td>
<td>CBJ HF, 2 Years</td>
<td>Squat type warts on ventral neck, shoulder and trunk</td>
<td>n = 25</td>
<td>3-4 cm</td>
<td>No clinical alteration</td>
</tr>
<tr>
<td>10</td>
<td>BDN-25</td>
<td>CBJ HF, 3 Years</td>
<td>Non pedunculated cauliflower like warts on head, neck and inter-scapular region</td>
<td>n = 20</td>
<td>3-5 cm</td>
<td>No clinical alteration</td>
</tr>
<tr>
<td>11</td>
<td>BDN-31</td>
<td>MB HF, 3 Years</td>
<td>Nodular and dome shaped warts on peri-orbital area</td>
<td>n = 16</td>
<td>3-6 cm</td>
<td>No clinical alteration</td>
</tr>
<tr>
<td>12</td>
<td>BDN-35</td>
<td>Gir Cow, 4 Years</td>
<td>Rice grain type warts on all four teats</td>
<td>n = 16</td>
<td>1-2 cm</td>
<td>No clinical alteration</td>
</tr>
<tr>
<td>13</td>
<td>BDN-36</td>
<td>Gir HF, 3 Years</td>
<td>Warts in cluster at para-genital region</td>
<td>n = 23</td>
<td>2-4 cm</td>
<td>No clinical alteration</td>
</tr>
<tr>
<td>14</td>
<td>BDN-37</td>
<td>ND HF, 2 Years</td>
<td>Small cauliflower like warts on back</td>
<td>n = 05</td>
<td>2-3 cm</td>
<td>No clinical alteration</td>
</tr>
<tr>
<td>No.</td>
<td>Breed</td>
<td>Age</td>
<td>Location</td>
<td>Number</td>
<td>Type</td>
<td>Size</td>
</tr>
<tr>
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</tr>
<tr>
<td>15</td>
<td>BDN-44</td>
<td>CBJ HF, 2 Years</td>
<td>Nodular and pea shaped warts</td>
<td>n = 16</td>
<td>1-2 cm</td>
<td>No clinical alteration</td>
</tr>
<tr>
<td>16</td>
<td>BDN-45</td>
<td>ND HF, 2 Years</td>
<td>Pedunculated warts on head, neck and shoulder</td>
<td>n = 25</td>
<td>1-2 cm</td>
<td>No clinical alteration</td>
</tr>
<tr>
<td>17</td>
<td>BDN-46</td>
<td>ND HF, 1.5 Years</td>
<td>Nodular and cauliflower like warts on neck, face, muzzle and rima-oris</td>
<td>n &gt; 25</td>
<td>1-2 cm</td>
<td>No clinical alteration</td>
</tr>
<tr>
<td>18</td>
<td>BDN-48</td>
<td>ND HF, 1.5 Years</td>
<td>Sessile type warts on fore limbs, brisket and thorax</td>
<td>n = 20</td>
<td>3-5 cm</td>
<td>No clinical alteration</td>
</tr>
<tr>
<td>19</td>
<td>BDN-49</td>
<td>HLX HF, 1.5 Years</td>
<td>Cauliflower like warts on head, ear base and both sides of the neck</td>
<td>n = 16</td>
<td>3-6 cm</td>
<td>No clinical alteration</td>
</tr>
<tr>
<td>20</td>
<td>BDN-50</td>
<td>MB HF, 2.5 Years</td>
<td>Cauliflower like warts on both sides of the barrel</td>
<td>n = 25</td>
<td>3-4 cm</td>
<td>No clinical alteration</td>
</tr>
<tr>
<td>21</td>
<td>BDN-56</td>
<td>Gir HF, 1.5 Years</td>
<td>Whole body affection</td>
<td>n = 250</td>
<td>3-5 cm</td>
<td>Little reduction in size</td>
</tr>
<tr>
<td>22</td>
<td>BDN-57</td>
<td>ND HF, 2.5 Years</td>
<td>Cauliflower like warts on hind limbs</td>
<td>n = 16</td>
<td>2-6 cm</td>
<td>No clinical alteration</td>
</tr>
<tr>
<td>23</td>
<td>EMP-1</td>
<td>ND HF, 2 Years</td>
<td>Cauliflower like warts on head, neck and oral cavity</td>
<td>n = 18</td>
<td>1-1.5 cm</td>
<td>No clinical alteration</td>
</tr>
<tr>
<td>24</td>
<td>EMP-3</td>
<td>ND MC, 10 Months</td>
<td>Cauliflower like warts on fore limbs and belly</td>
<td>n = 27</td>
<td>91-2.5 cm</td>
<td>No clinical alteration</td>
</tr>
<tr>
<td>25</td>
<td>EMP-4</td>
<td>ND FC, 11 Months</td>
<td>Cauliflower like warts on extremities of all four limbs</td>
<td>n = 17</td>
<td>1-2 cm</td>
<td>No clinical alteration</td>
</tr>
<tr>
<td>26</td>
<td>EMP-6</td>
<td>ND BK, 3 Years</td>
<td>Tag type warts at perianal and inguinal region</td>
<td>n = 14</td>
<td>2-3 cm</td>
<td>No clinical alteration</td>
</tr>
<tr>
<td>27</td>
<td>EMP-8</td>
<td>ND HF, 2.5 Years</td>
<td>Cauliflower like warts on ventral surface of the abdomen</td>
<td>n = 17</td>
<td>1-3 cm</td>
<td>No clinical alteration</td>
</tr>
<tr>
<td>28</td>
<td>EMP-10</td>
<td>ND HF, 3 Years</td>
<td>Squat type warts on head, cheeks and ears</td>
<td>n = 9</td>
<td>3-4 cm</td>
<td>Growth inhibited</td>
</tr>
<tr>
<td>29</td>
<td>EMP-11</td>
<td>ND MC, 10 Months</td>
<td>Cauliflower like warts on eyes, ears and lower jaw</td>
<td>n = 9</td>
<td>1.5-3 cm</td>
<td>No clinical alteration</td>
</tr>
<tr>
<td>30</td>
<td>EMP-13</td>
<td>ND BK, 4 Years</td>
<td>Squat type warts on scrotum and inside the left thigh</td>
<td>n = 7</td>
<td>2-3 cm</td>
<td>Little reduction in size</td>
</tr>
</tbody>
</table>

**Results**
5.2.2 Effect of Thuja (200X potency) oral therapy on Bovine and bubaline cutaneous papillomatosis

Table-129: Effect of Thuja (200X potency) oral therapy on Bovine and bubaline cutaneous and teat papillomatosis

<table>
<thead>
<tr>
<th>Sl No</th>
<th>Animal I/D</th>
<th>Animal details (Breed, age, sex)</th>
<th>Distribution of wart/site/location</th>
<th>No of warts</th>
<th>Size</th>
<th>Recovery status on Thuja-200X per os/Response to Thuja 200X by oral route</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>DPT-15</td>
</tr>
<tr>
<td>1</td>
<td>EMP-29</td>
<td>ND MC, 12 Months</td>
<td>Cauliflower like pedunculated warts on shoulder. Limbs, neck and lumbar region</td>
<td>n = 47</td>
<td>1-1.5 cm</td>
<td>Little reduction in size</td>
</tr>
<tr>
<td>2</td>
<td>EMP-34</td>
<td>ND MC, 13 Months</td>
<td>Cauliflower like pedunculated warts on fore limbs</td>
<td>n = 20</td>
<td>2-3 cm</td>
<td>No clinical alteration</td>
</tr>
<tr>
<td>3</td>
<td>EMP-36</td>
<td>ND BK, 4 Years</td>
<td>Flat, non pedunculated warts on face and ear base</td>
<td>n = 21</td>
<td>1-3 cm</td>
<td>Little reduction in size</td>
</tr>
<tr>
<td>4</td>
<td>EMP-37</td>
<td>ND HF, 2.5 Years</td>
<td>Cauliflower like pedunculated warts on fore limbs and neck</td>
<td>n = 19</td>
<td>2-3 cm</td>
<td>No clinical alteration</td>
</tr>
<tr>
<td>5</td>
<td>EMP-48</td>
<td>CBJ Cow, 4 Years</td>
<td>Diffuse frond type warts on teats only</td>
<td>n = 12</td>
<td>0.5-2 cm</td>
<td>No clinical alteration</td>
</tr>
<tr>
<td>6</td>
<td>EMP-51</td>
<td>ND HF, 2 Years</td>
<td>Rounded and dome shaped warts</td>
<td>n = 22</td>
<td>1-3 cm</td>
<td>No clinical alteration</td>
</tr>
<tr>
<td>7</td>
<td>EMP-52</td>
<td>ND HF, 2 Years</td>
<td>Squat type warts</td>
<td>n = 12</td>
<td>1.5-2 cm</td>
<td>No clinical alteration</td>
</tr>
<tr>
<td>8</td>
<td>EMP-54</td>
<td>ND HF, 2 Years</td>
<td>Nodular squat type warts at para-genital region and axillae</td>
<td>n = 22</td>
<td>0.5-2 cm</td>
<td>No clinical alteration</td>
</tr>
<tr>
<td>9</td>
<td>EMP-57</td>
<td>ND HF, 2 Years</td>
<td>Small cauliflower like warts on shoulder and right fore limb</td>
<td>n = 12</td>
<td>1.5-2 cm</td>
<td>No clinical alteration</td>
</tr>
<tr>
<td>10</td>
<td>EMP-59</td>
<td>CBJ Cow, 4 Years</td>
<td>Rice grain types wart on all four teats</td>
<td>n = 7</td>
<td>0.5-1 cm</td>
<td>No clinical alteration</td>
</tr>
<tr>
<td>11</td>
<td>EMP-61</td>
<td>ND HF, 2 Years</td>
<td>Cauliflower like pedunculated warts on head and shoulder</td>
<td>n = 18</td>
<td>0.5-1 cm</td>
<td>No clinical alteration</td>
</tr>
<tr>
<td>Case</td>
<td>Breed</td>
<td>Age</td>
<td>Lesion Description</td>
<td>Lesion Size</td>
<td>Clinical Change</td>
<td>Treatment Effect</td>
</tr>
<tr>
<td>------</td>
<td>-------</td>
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<td>-------------</td>
<td>-----------------</td>
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</tr>
<tr>
<td>12</td>
<td>EMP-62</td>
<td>CBJ Cow, 4 Years</td>
<td>Squat type warts on ears and around the eyes</td>
<td>n = 23</td>
<td>2-5 cm</td>
<td>Little reduction in size</td>
</tr>
<tr>
<td>13</td>
<td>EMP-63</td>
<td>ND HF, 2 Years</td>
<td>Cauliflower like pedunculated warts on head, face and ears</td>
<td>n = 17</td>
<td>2-3 cm</td>
<td>No clinical alteration</td>
</tr>
<tr>
<td>14</td>
<td>EMP-64</td>
<td>CBJ Cow, 4 Years</td>
<td>Small sessile type warts on ears and fore limbs</td>
<td>n = 6</td>
<td>0.5-2 cm</td>
<td>No clinical alteration</td>
</tr>
<tr>
<td>15</td>
<td>EMP-67</td>
<td>CBJ HF, 1.5 Years</td>
<td>Small sessile type warts on ear tips and around the eyes</td>
<td>n = 27</td>
<td>0.5-2 cm</td>
<td>No clinical alteration</td>
</tr>
<tr>
<td>16</td>
<td>EMP-73</td>
<td>ND HF, 2 Years</td>
<td>Squat type warts on limbs and body</td>
<td>n = 18</td>
<td>1-1.5 cm</td>
<td>No clinical alteration</td>
</tr>
<tr>
<td>17</td>
<td>EMP-74</td>
<td>ND HF, 2 Years</td>
<td>Cauliflower like warts fore limbs an ear tips</td>
<td>n = 12</td>
<td>1.5 - 3 cm</td>
<td>No clinical alteration</td>
</tr>
<tr>
<td>18</td>
<td>EMP-76</td>
<td>ND HF, 2 Years</td>
<td>Small nodular warts on face, eyes, neck and thorax</td>
<td>n &gt; 50</td>
<td>1.5 - 2.5 cm</td>
<td>No clinical alteration</td>
</tr>
<tr>
<td>19</td>
<td>EMP-79</td>
<td>ND HF, 2.5 Years</td>
<td>Small sessile type warts fore limbs an ear tips</td>
<td>n = 12</td>
<td>1-1.5 cm</td>
<td>No appreciable change</td>
</tr>
<tr>
<td>20</td>
<td>EMP-80</td>
<td>ND BK, 3 Years</td>
<td>Small cauliflower like warts on left hind thigh and perineal region</td>
<td>n = 12</td>
<td>2-3 cm</td>
<td>No clinical alteration</td>
</tr>
<tr>
<td>21</td>
<td>EMP-82</td>
<td>ND HF, 3 Years</td>
<td>Cauliflower like warts on neck and thorax</td>
<td>n = 12</td>
<td>3-5 cm</td>
<td>No clinical alteration</td>
</tr>
<tr>
<td>22</td>
<td>MDH-1</td>
<td>CBJ Cow, 4 Years</td>
<td>Cauliflower like warts on head, back and chin</td>
<td>n = 15</td>
<td>2-3 cm</td>
<td>No clinical alteration</td>
</tr>
<tr>
<td>23</td>
<td>MDH-5</td>
<td>CBJ Cow, 3 Years</td>
<td>Cauliflower like warts on fore limbs</td>
<td>n = 25</td>
<td>2-4 cm</td>
<td>No clinical alteration</td>
</tr>
<tr>
<td>Sl No</td>
<td>Animal I/D</td>
<td>Animal details (Breed, age, sex)</td>
<td>Distribution of wart/site/location</td>
<td>No of warts</td>
<td>Size</td>
<td>Recovery status on Thuja 200X S/C therapy on CWT/Response to Thuja 200X by S/C route</td>
</tr>
<tr>
<td>-------</td>
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<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>DPT-15, DPT-30, DPT-45, DPT-60, DPT-75, DPT-90</td>
</tr>
<tr>
<td>1</td>
<td>MDH-24</td>
<td>CBJ Cow, 5 Years</td>
<td>Squat type warts on teats and udder</td>
<td>n = 12</td>
<td>1-3 cm</td>
<td>Little reduction in size, Smaller warts started falling, Complete cure of miniature size warts, Drying with reduction in size of big ones, Big ones were in the process of falling, Complete peeling of all warts</td>
</tr>
<tr>
<td>2</td>
<td>MDH-25</td>
<td>ND BK, 3 Years</td>
<td>Cauliflower like pedunculated warts on neck and shoulder</td>
<td>n = 16</td>
<td>3-4 cm</td>
<td>Little reduction in size, Smaller warts started falling, Complete cure of miniature size warts, Drying with reduction in size of big ones, Big ones were in the process of falling, Complete peeling of all warts</td>
</tr>
<tr>
<td>3</td>
<td>MDH-29</td>
<td>CBJ HF, 3 Years</td>
<td>Cauliflower like warts at peri-genital region</td>
<td>n = 16</td>
<td>3-4 cm</td>
<td>Little reduction in size, Smaller warts started falling, Complete cure of miniature size warts, Drying with reduction in size of big ones, Big ones were in the process of falling, Complete peeling of all warts</td>
</tr>
<tr>
<td>4</td>
<td>MDH-32</td>
<td>ND FC, 9 Months</td>
<td>Cauliflower like pedunculated warts on fore limbs and peri-orbital area</td>
<td>n = 15</td>
<td>2-3 cm</td>
<td>No clinical alteration, Little reduction in size, 75% reduction in size of warts, Some small sized warts sloughed off, Big ones shrivelled and hardened, All dropped leaving scars</td>
</tr>
</tbody>
</table>

5.2.3 Effect of Thuja (200X potency by S/C route) parenteral therapy on Bovine and bubaline cutaneous papillomatosis

Table-130: Effect of Thuja (200X potency by S/C route) parenteral therapy on Bovine and bubaline cutaneous papillomatosis
<p>| | | | | | | | | | |</p>
<table>
<thead>
<tr>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>MDH-33</td>
<td>Sahiwal Cow, 6 Years</td>
<td>Diffuse frond type warts on teats and udder</td>
<td>n = 12</td>
<td>0.5-2 cm</td>
<td>No clinical alteration</td>
<td>Little reduction in size</td>
<td>Cure of miniature sized warts</td>
<td>Drying with reduction in size</td>
</tr>
<tr>
<td>6</td>
<td>MDH-37</td>
<td>ND FC, 9 Months</td>
<td>Small nodular warts on neck and shoulder</td>
<td>n = 12</td>
<td>1-3 cm</td>
<td>Little reduction in size</td>
<td>Drying with gradual reduction in size</td>
<td>Cure of miniature sized warts</td>
<td>Large warts showed indication of necrosis</td>
</tr>
<tr>
<td>7</td>
<td>MDH-38</td>
<td>ND FC, 12 Months</td>
<td>Cauliflower like pedunculated warts on neck and shoulder</td>
<td>n = 16</td>
<td>3-4 cm</td>
<td>No reduction in size</td>
<td>No clinical alteration</td>
<td>Drying with reduction in size</td>
<td>Drying, shrinking and hardening</td>
</tr>
<tr>
<td>8</td>
<td>NDA-136</td>
<td>MBF, 8 Years</td>
<td>Frond type warts on teat crest</td>
<td>n = 12</td>
<td>0.5-1 cm</td>
<td>Little reduction in size</td>
<td>Smaller warts started falling</td>
<td>Complete cure of miniature sized warts</td>
<td>Drying with reduction in size of big ones</td>
</tr>
<tr>
<td>9</td>
<td>NDA-137</td>
<td>MBF, 6 Years</td>
<td>Rice grain type warts on all four teats around the teat orifice</td>
<td>n = 16</td>
<td>1.5-2 cm</td>
<td>Little or no reduction in size</td>
<td>No clinical alteration</td>
<td>No reduction in size</td>
<td>No clinical alteration</td>
</tr>
<tr>
<td>10</td>
<td>NDA-139</td>
<td>ND BF, 5 Years</td>
<td>Rice grain types wart on all four teats around the teat orifice</td>
<td>n = 9</td>
<td>0.5-1 cm</td>
<td>Little or no reduction in size</td>
<td>No clinical alteration</td>
<td>Drying with reduction in size</td>
<td>Cure of miniature sized warts</td>
</tr>
<tr>
<td>11</td>
<td>NDA-140</td>
<td>MBF, 5 Years</td>
<td>Rice grain types wart on rear teats around teat orifice</td>
<td>n = 9</td>
<td>0.5-1 cm</td>
<td>Little or no reduction in size</td>
<td>No clinical alteration</td>
<td>No reduction in size</td>
<td>No clinical alteration</td>
</tr>
<tr>
<td>12</td>
<td>NDA-141</td>
<td>MBF, 5 Years</td>
<td>Frond type warts on all four teats around teat orifice</td>
<td>n = 12</td>
<td>2-5 cm</td>
<td>Little reduction in size</td>
<td>Smaller warts started falling</td>
<td>Complete cure of miniature sized warts</td>
<td>Drying with reduction in size of big ones</td>
</tr>
<tr>
<td>13</td>
<td>BKU-1</td>
<td>CBJ HF, 2 Years</td>
<td>Cauliflower like pedunculated warts on left eye and corners of the mouth</td>
<td>n = 26</td>
<td>2-3 cm</td>
<td>Little reduction in size</td>
<td>Smaller warts started falling</td>
<td>Complete cure of miniature sized warts</td>
<td>Drying with reduction in size of big ones</td>
</tr>
<tr>
<td>14</td>
<td>BKU-2</td>
<td>ND HF, 1.5 Years</td>
<td>Small scattered warts on ear tips, eyelids and distal fore limbs</td>
<td>n = 7</td>
<td>1-1.5 cm</td>
<td>Little reduction in size</td>
<td>Smaller warts started falling</td>
<td>Complete cure of miniature sized warts</td>
<td>Complete peeling of all warts</td>
</tr>
<tr>
<td>15</td>
<td>BKU-3</td>
<td>ND BF, 4 Years</td>
<td>Florid type wart with horny projections on inner surface of left ear pinna</td>
<td>n = 01</td>
<td>4 cm</td>
<td>Little reduction in size</td>
<td>Little reduction in size</td>
<td>Little reduction in size</td>
<td>Shrunked and hardened</td>
</tr>
<tr>
<td>16</td>
<td>BKU-4</td>
<td>ND HF, 2 Years</td>
<td>Squat type warts on neck, trunk and axilla</td>
<td>n = 80</td>
<td>2-5 cm</td>
<td>Little reduction in size</td>
<td>Smaller warts started falling</td>
<td>Complete cure of miniature sized warts</td>
<td>Drying with reduction in size</td>
</tr>
<tr>
<td>17</td>
<td>BKU-5</td>
<td>ND Young bull, 2.5 Years</td>
<td>Asbestos like greyish white crusty warts on back and barrel</td>
<td>n = 20</td>
<td>2-3 cm</td>
<td>No clinical alteration</td>
<td>No clinical alteration</td>
<td>Little reduction in size</td>
<td>Growth prevented</td>
</tr>
<tr>
<td>18</td>
<td>BKU-7</td>
<td>MBF, 6 Years</td>
<td>Frond type warts on teats</td>
<td>n = 18</td>
<td>1-1.5 cm</td>
<td>No clinical alteration</td>
<td>No clinical alteration and</td>
<td>No clinical alteration and</td>
<td>No clinical alteration and</td>
</tr>
</tbody>
</table>

**Results**
<table>
<thead>
<tr>
<th>Case</th>
<th>Breed</th>
<th>Age</th>
<th>Description</th>
<th>Number</th>
<th>Size</th>
<th>Treatment</th>
<th>Healing</th>
<th>Additional Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>19</td>
<td>ND Young bull, 3 Years</td>
<td>Small sessile type warts flank and perineum</td>
<td>20</td>
<td>2-2.5 cm</td>
<td>Little reduction in size</td>
<td>Smaller warts started falling</td>
<td>Complete cure of miniature size warts</td>
<td>Drying with reduction in size of big ones</td>
</tr>
<tr>
<td>20</td>
<td>ND MC, 11 Months</td>
<td>Cauliflower like warts on face, eyes and fore limbs</td>
<td>23</td>
<td>3-4 cm</td>
<td>No clinical alteration</td>
<td>No clinical alteration</td>
<td>Little reduction in size</td>
<td>Growth prevented</td>
</tr>
<tr>
<td>21</td>
<td>ND Young bull, 3.5 Years</td>
<td>Cauliflower like warts on head and around eyes</td>
<td>21</td>
<td>1-3 cm</td>
<td>Little reduction in size</td>
<td>Smaller warts started falling</td>
<td>Complete cure of miniature size warts</td>
<td>Drying with reduction in size of big ones</td>
</tr>
<tr>
<td>22</td>
<td>ND Young bull, 3 Years</td>
<td>Cauliflower like warts on fore limbs</td>
<td>26</td>
<td>2-3 cm</td>
<td>Little reduction in size</td>
<td>Smaller warts started falling</td>
<td>Complete cure of miniature size warts</td>
<td>Drying with reduction in size of big ones</td>
</tr>
<tr>
<td>23</td>
<td>ND Young bull, 2.5 Years</td>
<td>Dome shaped warts on fore limbs</td>
<td>20</td>
<td>1-2.5 cm</td>
<td>No clinical alteration</td>
<td>No clinical alteration</td>
<td>Little reduction in size</td>
<td>Growth prevented</td>
</tr>
<tr>
<td>24</td>
<td>CBJ Cow, 3 Years</td>
<td>Small rice grain type warts on teats only</td>
<td>20</td>
<td>1-1.5 cm</td>
<td>No clinical alteration</td>
<td>No clinical alteration</td>
<td>Little reduction in size</td>
<td>Growth prevented</td>
</tr>
<tr>
<td>25</td>
<td>ND BF, 5 Years</td>
<td>Small rice grain type warts on teats only</td>
<td>16</td>
<td>1-1.5 cm</td>
<td>No clinical alteration</td>
<td>No clinical alteration</td>
<td>Little reduction in size</td>
<td>Growth prevented</td>
</tr>
<tr>
<td>26</td>
<td>CBJ HF, 2.4 Months</td>
<td>Dome shaped warts on face and fore limbs</td>
<td>9</td>
<td>2-3 cm</td>
<td>Little reduction in size</td>
<td>Smaller warts started falling</td>
<td>Complete cure of miniature size warts</td>
<td>Drying with reduction in size of big ones</td>
</tr>
<tr>
<td>27</td>
<td>ND MC, 12 Months</td>
<td>Squat type warts on both sides of the neck</td>
<td>8</td>
<td>3-4 cm</td>
<td>Little reduction in size</td>
<td>Smaller warts started falling</td>
<td>Complete cure of miniature size warts</td>
<td>Drying with reduction in size of big ones</td>
</tr>
<tr>
<td>28</td>
<td>CBJ HF, 2.4 Months</td>
<td>Whole body affection with pedunculated warts</td>
<td>65</td>
<td>1-5 cm</td>
<td>Little reduction in size</td>
<td>Drying and dropping started</td>
<td>Drying and reduction in size</td>
<td>50% warts sloughed up</td>
</tr>
<tr>
<td>29</td>
<td>CBJ HF, 2 Years</td>
<td>Dome shaped and nodular warts around eyes and upper eye lids</td>
<td>10</td>
<td>1-2 cm</td>
<td>Little reduction in size</td>
<td>Smaller warts started falling</td>
<td>Complete cure of miniature size warts</td>
<td>Drying with reduction in size of big ones</td>
</tr>
<tr>
<td>30</td>
<td>CBJ Cow, 3 Years</td>
<td>Sessile type warts on both sides of the neck</td>
<td>7</td>
<td>4-5 cm</td>
<td>Little reduction in size</td>
<td>Drying and dropping started</td>
<td>Drying and reduction in size</td>
<td>30% warts sloughed up</td>
</tr>
</tbody>
</table>
5.2.4 Homeopathic remedy for Bovine and bubaline papillomatosis: Comparative studies on the effectiveness of Thuja with different potency and mode of administration

Effect of Thuja mother tincture per os (oral medication), Thuja 200X potency per oral route (Table-129, Figure-71, C &D) and Thuja 200X by per cutaneous (S/C) route, on bovine papillomatosis have been summarized in table (Table-131-133). There was diminution in size of the lesions and gradual desiccation of the warts, irrespective of papillomas, nature and size. Regression of warts was visually assessed, based on gradual reduction in size, drying, shrinking, change in coloration and peeling or sloughing of warts. Remarkable recovery or complete clinical cure with all three regimes of treatment was noted with the success rate 76.66%, 70% and 60% respectively. Grossly, the warts were dried and left a great thickness of epidermis upon fixation. Microscopic examination of regressive papilloma collected at sixth week onwards of post treatment revealed cellular necrosis.

Table-131: Effect of Thuja mother tincture per os (n = 30) in gist form showing recovery status on clinical cases of cutaneous and teat papillomatosis of cattle and buffalo

<table>
<thead>
<tr>
<th>Response to treatment at different DPT</th>
<th>No Clinical alteration</th>
<th>Regression or Clinical alteration</th>
<th>Complete clinical cure</th>
</tr>
</thead>
<tbody>
<tr>
<td>DPT-15 (n = 30)</td>
<td>n = 26</td>
<td>n = 04 (Little reduction in size)</td>
<td>n = 0</td>
</tr>
<tr>
<td>DPT-30 (n = 30)</td>
<td>n = 25</td>
<td>n = 05 (dropping started in four cases)</td>
<td>n = 0</td>
</tr>
<tr>
<td>DPT-45 (n = 30)</td>
<td>n = 05</td>
<td>n = 24 (complete dropping of all small warts in four cases)</td>
<td>n = 1</td>
</tr>
<tr>
<td>DPT-60 (n = 29)</td>
<td>n = 05</td>
<td>n = 23 (Regression and shedding on progress)</td>
<td>n = 01</td>
</tr>
<tr>
<td>DPT-75 (n = 28)</td>
<td>n = 05</td>
<td>n = 06 (Regression and shedding on progress even of the large warts)</td>
<td>n = 17</td>
</tr>
<tr>
<td>DPT-90 (n = 11)</td>
<td>n = 05</td>
<td>n = 02 (Regression and shedding on progress and necrosis of the large warts)</td>
<td>n = 04</td>
</tr>
</tbody>
</table>

Recovery status: complete clinical cure- (n = 23), 76.66%; Partial to moderate Recovery- (n = 2), 6.66%; No clinical alteration- (n = 05), 16.66%; overall response to treatment-(n = 25), 83.33%

Table-132: Effect of Thuja 200X per os (n = 30) in gist form showing recovery status on clinical cases of cutaneous and teat papillomatosis of cattle and buffalo

<table>
<thead>
<tr>
<th>Response to treatment at different DPT</th>
<th>No Clinical alteration</th>
<th>Regression or Clinical alteration</th>
<th>Complete clinical cure</th>
</tr>
</thead>
<tbody>
<tr>
<td>DPT-15 (n = 30)</td>
<td>n = 27</td>
<td>n = 03 (Little reduction in size)</td>
<td>n = 0</td>
</tr>
<tr>
<td>DPT-30 (n = 30)</td>
<td>n = 17</td>
<td>n = 13 (Drying and dropping started)</td>
<td>n = 0</td>
</tr>
<tr>
<td>DPT-45 (n= 30)</td>
<td>n = 06</td>
<td>n = 24 (Drying and dropping on progress: shedding of 20-30% warts)</td>
<td>n = 0</td>
</tr>
<tr>
<td>DPT-60 (n= 30)</td>
<td>n = 06</td>
<td>n = 24 (Drying and dropping hastened: shedding of almost 50% warts)</td>
<td>n = 0</td>
</tr>
<tr>
<td>DPT-75 (n = 30)</td>
<td>n = 06</td>
<td>n = 19 (Drying and dropping hastened: shedding of almost 75-80% warts)</td>
<td>n = 05</td>
</tr>
<tr>
<td>DPT-90 (n = 25)</td>
<td>n = 06</td>
<td>n = 03 (Almost clinical recovery: few big warts yet to drop off, although get necrosed)</td>
<td>n = 16</td>
</tr>
</tbody>
</table>
Recovery status—Complete clinical cure—(21/30)70%, Moderate shedding/regression—(3/30)10%; Overall response (24/30) 80%, No clinical alteration-20%

Table-133: Effect of Thuja 200X by S/C administration in gist form showing recovery status on clinical cases of cutaneous and teat papillomatosis of cattle and buffalo

<table>
<thead>
<tr>
<th>Response to treatment at different DPT</th>
<th>No Clinical alteration</th>
<th>Regression or Clinical alteration</th>
<th>Complete clinical cure</th>
</tr>
</thead>
<tbody>
<tr>
<td>DPT-15 (n = 30)</td>
<td>n = 12</td>
<td>n = 18 (Little reduction in size)</td>
<td>n = 0</td>
</tr>
<tr>
<td>DPT-30 (n = 30)</td>
<td>n = 10</td>
<td>n = 20 (Smaller warts started falling in 16, little reduction in size in 4)</td>
<td>n = 0</td>
</tr>
<tr>
<td>DPT-45 (n = 30)</td>
<td>n = 03</td>
<td>n = 27 (Complete shedding of small warts and 50-75% reduction in size of big warts in 21 cases, little reduction in size in 6 cases)</td>
<td>n = 0</td>
</tr>
<tr>
<td>DPT-60 (n = 30)</td>
<td>n = 03</td>
<td>n = 26 (Shedding and necrosis of big warts started in 21 cases, reduction in size and growth prevention of warts in 5 cases)</td>
<td>n = 01</td>
</tr>
<tr>
<td>DPT-75 (n = 29)</td>
<td>n = 03</td>
<td>n = 24 (Peeling of most of the warts and big ones were about to fall)</td>
<td>n = 02</td>
</tr>
<tr>
<td>DPT-90 (n = 27)</td>
<td>n = 03</td>
<td>n = 09 (Most of the warts dropped, few yet to slough up)</td>
<td>n = 15</td>
</tr>
</tbody>
</table>

Recovery status—Complete clinical cure— (18/30) 60%, Partial to almost complete clinical cure— (9/30) 30%, Overall response—(27/30) 90%, No clinical alteration— (3/30) 10%

Thuja (Thuja mother tincture, Thuja-200X per os and Thuja-200x by S/C inj.) with concurrent use of sulphur were found effective in curing bovine cutaneous papillomatosis with a rate of 76.66%, 70% and 60% respectively and overall response to treatment on wart regression was 83.33%, 80% and 90% respectively. Little or no reduction in size of the papillomas was observed with in the first two weeks of treatment in all three treated groups (group-1, group-2 and group- 3). Thereafter, miniature size sessile and pedunculated warts started drying with the diminution or reduction in size that fell leaving hairless areas at the end of fourth week. By the thirteen week there was complete clinical cure of papillomas. Five (n = 5) animals (16.66%) from Thuja mother tincture treated group, six (n = 6) animals from Thuja 200X treated group (16.66%) and three (n = 3) (10%) animals from Thuja-200X S/C ly treated group did not respond to treatment at all. Whereas Thuja mother tincture oral therapy was found most effective in clinical cure of CCWT. Animals affected with large papillomas was not completely cured in all three groups (Group-1, n = 2, 6.66%, Group-2, n = 3, 10%, Group-3, n = 8, 26.66%). Complete clinical cure was noticed in 76.66% cases, partial regression was noticed in 6.66% cases and no clinical cure was noticed in 16.66% animals in Thuja mother tincture therapy per os. Complete regression and or clinical cure were noticed in 70% cases, moderate regression in 10% cases and no clinical cure and or alteration was noticed in 20 % cases in Thuja-200X orally medicated group. Thuja 200X parenteral therapy resulted in 70% clinical cure, 26.66 % patial regression and no clinical alteration or regression in 10 % cases. Microscopic examination of regressive papillomas at sixth week of treatment
showed cellular necrosis. Growth recurrence was not observed within one month of recovery. In untreated control group (n = 30), the number and size of papillomas increased.

5. 3 Results of treatment by autogenous vaccine on CWT and TP Results of treatments using autogenous vaccine prepared from Bovine papilloma (warts) after subcutaneous administration

5.3.1 Regimen-1(Effect of formalinized autogenous vaccine prepared from bovine wart lesions in sterile PBS on cutaneous and teat papillomatosis of cattle and buffalo)

All the clinically affirmative cases of CWT were subjected to close examination for making visual assessment of the papillomatous lesions . The shape, size and location of warts was recorded. The records of individual animals in relation to age, location of warts, their size were listed in the table (Table-134). The size and shape of papilloma before and after administration of formalinized autogenous vaccine prepared from bovine wart lesion in sterile PBS were compared and clinical alterations were scored as 0 (no clinical alteration), 1 (diminution in size, gradual desiccation, separation from under lying dermal base or regression) or 2 (full regression/ warts completely resolved/ complete shedding of warts), i.e. complete recovery. Administration of formalinized autogenous vaccine prepared in sterile PBS caused definite regression and peeling or sloughing of the warts from the affected areas. Results have been summarized in table with clinical recovery score (Table-134).

Table-134: Results of using Formalinized autogenous vaccine prepared from bovine wart lesions in sterile PBS on cutaneous and teat papillomatosis of cattle and buffalo

<table>
<thead>
<tr>
<th>Sl No</th>
<th>Animal No</th>
<th>Breed, age &amp; sex</th>
<th>Location of wart</th>
<th>Size</th>
<th>No of warts</th>
<th>DPT-15</th>
<th>DPT-30</th>
<th>DPT-45</th>
<th>DPT-60</th>
<th>DPT-75</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>NDA-167</td>
<td>2XHJ-45,Hf-1.5 Year</td>
<td>Cauliflower like warts on hind limbs</td>
<td>3-4 cm</td>
<td>05</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>2</td>
<td>NDA-168</td>
<td>3XHJ-65,Hf-2 Years</td>
<td>Cauliflower like warts on hind limbs</td>
<td>3.5 cm</td>
<td>10</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>3</td>
<td>NDA-169</td>
<td>2XFH-15, Hf-1.5 Year</td>
<td>Nodular warts on head, neck and thorax</td>
<td>2-3 cm</td>
<td>10</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>4</td>
<td>NDA-170</td>
<td>3XEH-15, Hf-2 Years</td>
<td>Nodular warts on head, neck and thorax</td>
<td>1-3 cm</td>
<td>15</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>5</td>
<td>NDA-171</td>
<td>HLX-063, MC, 10 Months</td>
<td>Cauliflower like warts on Head, face and ear base</td>
<td>1-2 cm</td>
<td>12</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>6</td>
<td>NDA-172</td>
<td>Haryana cow,3 Years</td>
<td>Hind limbs, pre femoral Region, stifles and flank region</td>
<td>1-2 cm</td>
<td>9</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>7</td>
<td>NDA-173</td>
<td>1XHJ-18, Hf-2 Years</td>
<td>Cauliflower like warts on Head, neck</td>
<td>2-3 cm</td>
<td>5</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>
Score -0 (zero) means no clinical alteration, neither reduction in size nor alteration of colour regression of warts, score-1, means onset of regression of warts through reduction in size, change of colour, drying or pelling, score-2, means complete recovery or disappearance of warts.

Regression studies or effectiveness of autogenous vaccine prepared from bovine wart lesion in sterile PBS revealed regression of papilloma started as early as 15 DPT (n = 9), sloughing or shedding of warts started as early as 45 DPT (n = 2) and maximum clinical recovery occurred at 75 DPT. Forty five percent (45%) complete clinical cure was noted within 6-7 weeks after the beginning of treatment and within 10 weeks all warts spontaneously disappeared from the rest of the affected animals except eight animals where partial recovery was noted but no complete recovery occurred. All together sixty percent
50% clinical recovery was noted with this mode of treatment. Control animals did not show any sign of regression but few showed intermediate neo formation.

5.3.2 Regimen-2 (Effect of formalinized autogenous vaccine prepared from bovine wart lesions in sterile NSS on cutaneous and teat papillomatosis of cattle and buffalo)

Administration of formalinized autogenous vaccine prepared from bovine wart lesion in sterile NSS caused definite regression and peeling or sloughing of the warts from the affected areas. Results have been summarized in table (Table-135) with clinical recovery score.

Table-135: Results of using Formalinized autogenous vaccine prepared from bovine wart lesions in sterile NSS (n = 20) on cutaneous and teat papillomatosis

<table>
<thead>
<tr>
<th>Sl No</th>
<th>Animal No</th>
<th>Breed, age &amp; sex</th>
<th>Location of wart</th>
<th>size</th>
<th>No of warts</th>
<th>Response of treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>DPT-15</td>
<td>DPT-30</td>
</tr>
<tr>
<td>1</td>
<td>NDA-147</td>
<td>1XBH-543, Hf, 1 Year</td>
<td>Firm cauliflower like warts On hind limbs</td>
<td>2-3 cm</td>
<td>n = 05</td>
<td>0</td>
</tr>
<tr>
<td>2</td>
<td>NDA-148</td>
<td>1XFJ-485, Hf-2 Years</td>
<td>Firm cauliflower like warts On hind limbs</td>
<td>2-3 cm</td>
<td>n = 10</td>
<td>0</td>
</tr>
<tr>
<td>3</td>
<td>NDA-149</td>
<td>1XFJ-670, MC, 1 Year</td>
<td>Scattered cauliflower like Warts on head, face and ear base</td>
<td>1-2 cm</td>
<td>n = 12</td>
<td>1</td>
</tr>
<tr>
<td>4</td>
<td>NDA-150</td>
<td>HY-262, Haryana cow 3 Years</td>
<td>Flat and round warts on hind Limbs, pre-femoral region, stifle and flank region</td>
<td>1-2 cm</td>
<td>n = 10</td>
<td>0</td>
</tr>
<tr>
<td>5</td>
<td>NDA-151</td>
<td>HY-765, Haryana cow 4 Years</td>
<td>Flat and round warts on hind Limbs, pre-femoral region, stifle and flank region</td>
<td>2-3 cm</td>
<td>n = 15</td>
<td>0</td>
</tr>
<tr>
<td>6</td>
<td>NDA-152</td>
<td>2XHJ-45, CBHF, 1 Year</td>
<td>Nodular warts on ear flaps, head and neck</td>
<td>2-3 cm</td>
<td>n = 05</td>
<td>0</td>
</tr>
<tr>
<td>7</td>
<td>NDA-153</td>
<td>3XHJ-45, CBHF, 2 Years</td>
<td>Firm cauliflower like warts On neck and thorax</td>
<td>2-3 cm</td>
<td>n = 16</td>
<td>1</td>
</tr>
<tr>
<td>8</td>
<td>NDA-154</td>
<td>4XHJ-65, CBFC, 11 Months</td>
<td>Proliferative warty growths On ear pinnae, right neck and around eyes</td>
<td>1-3 cm</td>
<td>n = 16</td>
<td>0</td>
</tr>
<tr>
<td>9</td>
<td>NDA-155</td>
<td>HLX-592, Cow, 3 Years</td>
<td>Warts in cluster on right axilla</td>
<td>2-3 cm</td>
<td>n = 10</td>
<td>1</td>
</tr>
<tr>
<td>10</td>
<td>NDA-156</td>
<td>HLX-123, Cow, 3.5 Years</td>
<td>Warts in cluster on right axilla</td>
<td>2-3 cm</td>
<td>n = 10</td>
<td>0</td>
</tr>
<tr>
<td>11</td>
<td>NDA-157</td>
<td>X1016, MC, 6 Months</td>
<td>Scattered cauliflower like Warts on head, face and ear flaps</td>
<td>1-3 cm</td>
<td>n = 30</td>
<td>1</td>
</tr>
<tr>
<td>12</td>
<td>NDA-158</td>
<td>1XHJ-42, FC, 8 Months</td>
<td>Cauliflower like warts on face and muzzle</td>
<td>2-5 cm</td>
<td>n = 15</td>
<td>0</td>
</tr>
<tr>
<td>13</td>
<td>NDA-159</td>
<td>2XHJ-262, FC, 10 Months</td>
<td>Scattered, stalked warts on ear Pinnae, head, neck and fore limbs</td>
<td>2-4 cm</td>
<td>n = 16</td>
<td>0</td>
</tr>
<tr>
<td>14</td>
<td>NDA-278</td>
<td>WB0909B/0042, CBMC 12 Months</td>
<td>Sessile warts on head region</td>
<td>2-3 cm</td>
<td>n = 14</td>
<td>1</td>
</tr>
<tr>
<td>15</td>
<td>NDA-279</td>
<td>WB0909B/0054, CBHF, 2 Years</td>
<td>Solitary sessile type warts on ear and neck</td>
<td>3-6 cm</td>
<td>n = 7</td>
<td>0</td>
</tr>
<tr>
<td>16</td>
<td>NDA-280</td>
<td>WB0909B/0142, CBHF, 3 Years</td>
<td>Peri orbital warts around eyes And upper eye lids</td>
<td>2-4 cm</td>
<td>n = 11</td>
<td>1</td>
</tr>
</tbody>
</table>
Score -0 (zero) means no clinical alteration, neither reduction in size nor alteration of colour regression of warts, score-1, means onset of regression of warts through reduction in size, change of colour, drying or peeling, score-2, means complete recovery or disappearance of warts.

Regression of papilloma in this mode of treatment started as early as 15 DPT (n=9), sloughing or shedding of warts started as early as 45 DPT (n = 2) and maximum clinical recovery occurred at 75 DPT. Fifty five percent (55%) complete clinical cure was noted within 7-8 weeks after the beginning of treatment and within 10 weeks all warts spontaneously disappeared from the rest of the affected animals except three animals where partial recovery was noted but no complete recovery occurred. All together eighty five percent (85%) clinical recovery was noted with this mode of treatment. Control animals did not show any sign of regression but few showed intermediate neo formation.

5.3.3 Regimen-3 (Therapy with formalinized autogenous vaccine prepared from bovine wart lesions in Glycerol saline solution on cutaneous and teat papillomatosis of cattle and buffalo)

Administration of formalinized autogenous vaccine prepared from bovine wart lesion in sterile Glycerol saline solution caused definite regression and peeling or sloughing of the warts from the affected areas. Results have been summarized in table (Table-136) with clinical recovery score.

Table-136: Results of using Formalinized autogenous vaccine prepared from bovine wart lesions in Glycerol saline solution (n = 20) on cutaneous and teat papillomatosis of cattle and buffalo

<table>
<thead>
<tr>
<th>Sl No</th>
<th>Animal I/D No</th>
<th>Breed, age &amp; sex</th>
<th>Location of wart</th>
<th>size</th>
<th>No of warts</th>
<th>Response of treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>n</td>
<td></td>
<td>DPT-15</td>
</tr>
<tr>
<td>1</td>
<td>KKT-25</td>
<td>WB0909C/0032, CBF, 13 Months</td>
<td>Extensive irregular cauliflower Like warts on face, neck and fore limbs</td>
<td>1-2 cm</td>
<td>n = 21</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>KKT-26</td>
<td>WB0909B/00952, CIHF, 3 Years</td>
<td>Sessile type warts on back and tail twitch</td>
<td>2-3 cm</td>
<td>n = 13</td>
<td>1</td>
</tr>
<tr>
<td>3</td>
<td>KKT-27</td>
<td>WB0909B/0058, HLX MC, 15 Months</td>
<td>Cauliflower like growth on whole body (whole body</td>
<td>1-5 cm</td>
<td>&gt;100</td>
<td>0</td>
</tr>
</tbody>
</table>
Score -0 (zero) means no clinical alteration, neither reduction in size nor alteration of colour regression of warts, score-1, means onset of regression of warts through reduction in size, change of colour, drying or peeling, score-2, means complete recovery or disappearance of warts.

Regression of papilloma in this mode of treatment started as early as 15 DPT (n = 3), sloughing or shedding of warts started as early as 30 DPT (n = 2) and maximum clinical recovery occurred at 60 DPT. Only fifteen percent (15%) complete clinical cure was noted within 7-8 weeks after the beginning of treatment and within 10 weeks all warts spontaneously disappeared from the rest of the affected animals except two animals where no clinical alteration of lesions occurred. Although partial regression was noted in 35% cases no

<table>
<thead>
<tr>
<th>No.</th>
<th>Group</th>
<th>Breed</th>
<th>Description</th>
<th>Size (cm)</th>
<th>n</th>
<th>Score 0</th>
<th>Score 1</th>
<th>Score 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>KKT-28</td>
<td>WB0909B/00952, HLX</td>
<td>Extensive warty growth on ear pinnae</td>
<td>3-4</td>
<td>24</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>5</td>
<td>KKT-29</td>
<td>WB0909B/0058, HLX</td>
<td>A big sized cauliflower like wart on lumbar region</td>
<td>5</td>
<td>24</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>6</td>
<td>NDA-231</td>
<td>S-1640, SHF, 2 Years</td>
<td>Pedunculated tumoral masses on head, ear and around eyes</td>
<td>1-3</td>
<td>05</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>7</td>
<td>NDA-232</td>
<td>S-222, SHF, 3 Years</td>
<td>Pedunculated warts on ear flaps, around the eyes, nose and eye brow</td>
<td>1-6</td>
<td>15</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>8</td>
<td>NDA-233</td>
<td>G-432, GHF, 2 Years</td>
<td>Pedunculated warts on inter-Scapular region and thorax</td>
<td>3-10</td>
<td>20</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>9</td>
<td>NDA-234</td>
<td>G-40, GMC, 8 Months</td>
<td>Pedunculated warts on neck region Bilateral affection</td>
<td>2-7</td>
<td>17</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>10</td>
<td>NDA-235</td>
<td>G-219, GHF, 2 Years</td>
<td>Sessile type warts on ears and neck</td>
<td>5-8</td>
<td>24</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>11</td>
<td>NDA-236</td>
<td>G-381,GHF, 3 Years</td>
<td>Pedunculated warts on neck, fore limbs and thorax</td>
<td>2-6</td>
<td>15</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>12</td>
<td>NDA-237</td>
<td>S-933,SHF, 3 Years</td>
<td>Pedunculated warts on head and inter-scapular region</td>
<td>1-4</td>
<td>12</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>13</td>
<td>NDA-114</td>
<td>JYXRS-951,4 Years</td>
<td>Rice grain type warts on All four teats</td>
<td>1-1.5</td>
<td>15</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>14</td>
<td>NDA-118</td>
<td>JYXS-484,4 Years</td>
<td>Rice grain type warts on Front two teats</td>
<td>0.5-1</td>
<td>08</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>15</td>
<td>NDA-120</td>
<td>ND Cow-00126, 4 Years</td>
<td>Rice grain type warts on udder and front two teats</td>
<td>1-1.5</td>
<td>19</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>16</td>
<td>NDA-148</td>
<td>MBF, 8 Years</td>
<td>Rice grain type warts on all Four teats</td>
<td>0.5</td>
<td>12</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>17</td>
<td>NTP-71</td>
<td>MBF, 5 Years</td>
<td>Rice grain type warts on all Four teats</td>
<td>0.5-2</td>
<td>12</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>18</td>
<td>HLY-89</td>
<td>MBF, 4 Years</td>
<td>Frond type warts on all four teats</td>
<td>1.5-2</td>
<td>12</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>19</td>
<td>NDA-139</td>
<td>MBF, 6 Years</td>
<td>Rice grain type warts on all Four teats</td>
<td>0.5-1</td>
<td>12</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>20</td>
<td>NDA-140</td>
<td>MBF, 5 Years</td>
<td>Frond type warts on all four teats</td>
<td>1.5-2</td>
<td>10</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
</tbody>
</table>
clinical alteration of lesions were noted in 10% animals. All together fifty five percent (55%) clinical recovery was noted with this mode of treatment. Control animals did not show any sign of regression but few showed intermediate neo formation.

5.3.4 Regimen-4 (Treatment of bovine and bubaline papillomatosis using 70% alcohol inactivated autogenous vaccine prepared from bovine wart lesions)

Administration of 70% alcohol inactivated autogenous vaccine prepared from bovine wart lesions caused definite regression and peeling or sloughing of the warts from the affected areas. Results have been summarized in table (Table-137) with clinical recovery score

Table-137: Results of treatment using 70% alcohol inactivated autogenous vaccine prepared from bovine wart lesions (n = 20) on bovine and bubaline papillomatosis

<table>
<thead>
<tr>
<th>Sl No</th>
<th>Animal No</th>
<th>Breed, age &amp; sex</th>
<th>Location of wart</th>
<th>size</th>
<th>No of warts</th>
<th>Response of treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>NDA-259</td>
<td>JXF2-007, CBMC, 12 Months</td>
<td>Cauliflower like grey, white Warts around scrotum and Inner aspect of the thigh</td>
<td>2-3 cm</td>
<td>n = 23</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>NDA-260</td>
<td>HL6X-139, CBHF, 2.5 Years</td>
<td>Cauliflower like grey, white Warts on ear base and ear flaps</td>
<td>2-3 cm</td>
<td>n = 10</td>
<td>1</td>
</tr>
<tr>
<td>3</td>
<td>NDA-261</td>
<td>5X-307, CBHF, 2.5 Years</td>
<td>Cauliflower like grey, white Warts on ear pinnae</td>
<td>1-4 cm</td>
<td>n = 40</td>
<td>1</td>
</tr>
<tr>
<td>4</td>
<td>NDA-267</td>
<td>B-2686, MBHF, 3 Years</td>
<td>Cauliflower like grey, white Warts on ano genital region</td>
<td>3-5 cm</td>
<td>n = 05</td>
<td>0</td>
</tr>
<tr>
<td>5</td>
<td>NDA-268</td>
<td>B-2659, MBHF, 4 Years</td>
<td>Cauliflower like grey, white Warts on ano genital region</td>
<td>3-5 cm</td>
<td>n = 05</td>
<td>0</td>
</tr>
<tr>
<td>6</td>
<td>HWH-29</td>
<td>2VRF-964, CIHF 1.5 Years</td>
<td>Cauliflower like masses on peri-Vulval region</td>
<td>3-4 cm</td>
<td>n = 16</td>
<td>1</td>
</tr>
<tr>
<td>7</td>
<td>HWH-30</td>
<td>WB0909C/00189, CIHF, 2 Years</td>
<td>Elevated dome shaped warts on Poll region, face and neck</td>
<td>1-4 cm</td>
<td>n = 38</td>
<td>0</td>
</tr>
<tr>
<td>8</td>
<td>HWH-31</td>
<td>WB0909C/00065, CIHF, 2 Years</td>
<td>Extensive cauliflower like growths On face, ears and neck</td>
<td>1-5 cm</td>
<td>n = 76</td>
<td>0</td>
</tr>
<tr>
<td>9</td>
<td>HWH-32</td>
<td>WB0909C/00145, HLXHF, 2 Years</td>
<td>Multiple coalescing exuberant growth With blackish coarse appearance On head, neck and belly</td>
<td>1-3 cm</td>
<td>n = 21</td>
<td>0</td>
</tr>
<tr>
<td>10</td>
<td>HWH-33</td>
<td>WB0909B/00145, HLXHF, 1.5 Years</td>
<td>Small cauliflower like growths on Fore limbs</td>
<td>1-3 cm</td>
<td>n = 32</td>
<td>0</td>
</tr>
<tr>
<td>11</td>
<td>NDA-146</td>
<td>MBF, 2 Years</td>
<td>Frond type warts on all four teats</td>
<td>0.5-2 cm</td>
<td>n = 10</td>
<td>0</td>
</tr>
<tr>
<td>12</td>
<td>HLY-89</td>
<td>MBF, 4 Years</td>
<td>Frond type warts on all four teats</td>
<td>1.5-2 cm</td>
<td>n = 12</td>
<td>0</td>
</tr>
<tr>
<td>13</td>
<td>NTP-77</td>
<td>MBF, 4 Years</td>
<td>Diffuse frond type warts on all four teats</td>
<td>1.5-2 cm</td>
<td>n = 09</td>
<td>0</td>
</tr>
</tbody>
</table>
Results

| Score -0 (zero) indicating no clinical alteration, neither reduction in size nor alteration of colour regression of warts, score-1, means onset of regression of warts through reduction in size, change of colour, drying or pelling, score-2, means complete recovery or disappearance of warts. Regression of papilloma in this mode of treatment started as early as 15 DPT (n = 4) and sloughing or shedding of warts started as early as 30 DPT but without complete clinical cure in any one of the treated case. At DPT 45, 15% (n = 3) clinical recovery was obtained and maximum clinical recovery occurred at 75 DPT. Only fifteen percent (15%) complete clinical cure was although noted within 6 weeks after the beginning of treatment, at DPT 75, 80% complete clinical cure was noted. Within 10 -11 weeks all warts spontaneously disappeared from the rest of the affected animals except four animals where partial clinical recovery was noted. Control animals did not show any sign of regression but few showed intermediate neo formation and even increase in size.

5.4 Autohemotherapy

5.4.1 Autohemotherapy alone

The size and shape of warts or papillomatous cutaneous lesions before and after autohemotherapy were compared and alterations were scored as 0 (for no clinical alteration), 1 (for onset of regression, drying, shrinkage, onset of dropping of warts or separation or loosening from underlying dermal base) or 2 (for full recovery or complete shedding). Therapeutic response to autohemotherapy as studied on 100 spontaneous cases of clinical cutaneous papillomatosis has shown in table (Table-138). The wart crops gradually dried up and there was gradual regression in size of the wart followed by its sloughing, leaving either scar marks or cutaneous sores. In all the cases treated with autohemotherapy, the cure of animals was observed after fourth injection of their own bloods.
### Table-138: Effect of autohemotherapy on clinical cure of bovine papillomatosis  
(n = 100 animals)

<table>
<thead>
<tr>
<th>Sl No</th>
<th>Animal ID</th>
<th>Category &amp; age of the animal</th>
<th>Anatomical location of wart</th>
<th>Duration of infection</th>
<th>Average size of warts</th>
<th>No of warts</th>
<th>Treatment result clinical recovery scores</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(DPT-7) (DPT-14) (DPT-21) (DPT-28) (DPT-60) (DPT-90)</td>
</tr>
<tr>
<td>1</td>
<td>BDN-21</td>
<td>CBJ HF 2 Years</td>
<td>Axilla and peri-vulval region</td>
<td>6 Months</td>
<td>1.5-2 cm</td>
<td>n = 26</td>
<td>0 0 1 1 2 -</td>
</tr>
<tr>
<td>2</td>
<td>BDN-28</td>
<td>CBJ HF 2 Years</td>
<td>Neck, shoulder and back</td>
<td>5 Months</td>
<td>1-2 cm</td>
<td>n = 20</td>
<td>0 1 1 2 -</td>
</tr>
<tr>
<td>3</td>
<td>BDN-32</td>
<td>ND HF 1.5 Years</td>
<td>Eyes and ears</td>
<td>5 Months</td>
<td>1-2 cm</td>
<td>n = 30</td>
<td>0 0 1 1 2 -</td>
</tr>
<tr>
<td>4</td>
<td>BDN-33</td>
<td>Gir MC 13 Months</td>
<td>For limbs</td>
<td>5 Months</td>
<td>3-4 cm</td>
<td>n = 25</td>
<td>0 0 1 1 1 2</td>
</tr>
<tr>
<td>5</td>
<td>BDN-34</td>
<td>ND HF 2 Years</td>
<td>Neck and fore limbs</td>
<td>5 Months</td>
<td>3-5 cm</td>
<td>n = 20</td>
<td>0 0 0 1 1 2</td>
</tr>
<tr>
<td>6</td>
<td>BDN-38</td>
<td>Sahiwal cow 4 Years</td>
<td>Mammary gland</td>
<td>7 Months</td>
<td>1-2 cm</td>
<td>n = 20</td>
<td>1 1 1 2 -</td>
</tr>
<tr>
<td>7</td>
<td>BDN-39</td>
<td>HLX Cow 4 Years</td>
<td>Teats only</td>
<td>5 Months</td>
<td>1-2 cm</td>
<td>n = 16</td>
<td>0 0 0 1 1 1</td>
</tr>
<tr>
<td>8</td>
<td>BDN-41</td>
<td>CBJ HF</td>
<td>Fore limb and belly</td>
<td>5 Months</td>
<td>1-2 cm</td>
<td>n = 20</td>
<td>0 0 1 1 1 2</td>
</tr>
<tr>
<td>9</td>
<td>BDN-43</td>
<td>ND HF 2.5 Years</td>
<td>Neck, shoulder and fore limb</td>
<td>5 Months</td>
<td>3-5 cm</td>
<td>n = 20</td>
<td>0 0 0 1 1 1</td>
</tr>
<tr>
<td>10</td>
<td>BDN-47</td>
<td>Gir HF 3 Years</td>
<td>Eyes and muzzle</td>
<td>5 Months</td>
<td>3-4 cm</td>
<td>n = 25</td>
<td>0 0 1 1 1 2</td>
</tr>
<tr>
<td>11</td>
<td>BDN-51</td>
<td>CBJ HF 2 Years</td>
<td>Hind limb, trunk and para-genital region</td>
<td>5 Months</td>
<td>3-5 cm</td>
<td>n = 21</td>
<td>1 1 1 2 -</td>
</tr>
<tr>
<td>12</td>
<td>BDN-52</td>
<td>ND HF 3 Years</td>
<td>Head, neck, dewlap and left fore limb</td>
<td>6 Months</td>
<td>3-6 cm</td>
<td>n = 16</td>
<td>0 0 0 1 1 2</td>
</tr>
<tr>
<td>13</td>
<td>BDN-53</td>
<td>ND HF 1.5 Year</td>
<td>Face, neck, back and barrel</td>
<td>6 Months</td>
<td>3-6 cm</td>
<td>n = 26</td>
<td>0 0 1 1 1 2</td>
</tr>
<tr>
<td>14</td>
<td>BDN-55</td>
<td>ND HF 1.5 Year</td>
<td>Hind limbs and paragenital region</td>
<td>5 Months</td>
<td>2-3 cm</td>
<td>n = 25</td>
<td>0 0 0 1 1 2</td>
</tr>
<tr>
<td>15</td>
<td>BKU-17</td>
<td>ND MC 11 Months</td>
<td>Ears, neck and around eyes</td>
<td>6 Months</td>
<td>1-2 cm</td>
<td>n = 08</td>
<td>0 0 1 1 1 2</td>
</tr>
<tr>
<td>16</td>
<td>BKU-18</td>
<td>ND BK 3 Years</td>
<td>Back</td>
<td>3 Months</td>
<td>2-4 cm</td>
<td>n = 05</td>
<td>0 0 0 1 1 2</td>
</tr>
<tr>
<td>17</td>
<td>BKU-22</td>
<td>ND Young bull, 2.5 Years</td>
<td>Face, neck and left fore limb</td>
<td>3 Months</td>
<td>2-3 cm</td>
<td>n = 8</td>
<td>0 0 1 1 1 2</td>
</tr>
<tr>
<td>18</td>
<td>BKU-24</td>
<td>CBJ HF 2 Years</td>
<td>Head, neck and fore limbs</td>
<td>6 Months</td>
<td>2-2.5 cm</td>
<td>n = 50</td>
<td>0 0 0 1 1 2</td>
</tr>
<tr>
<td>19</td>
<td>BKU-85</td>
<td>NDMC 10 Months</td>
<td>Eye lids, ears and neck</td>
<td>4 Months</td>
<td>1-2 cm</td>
<td>n = 9</td>
<td>0 0 1 1 1 2</td>
</tr>
<tr>
<td>20</td>
<td>BKU-86</td>
<td>ND HF</td>
<td>Face, ears and</td>
<td>4 Months</td>
<td>1-3 cm</td>
<td>n = 18</td>
<td>0 0 0 1 1 2</td>
</tr>
<tr>
<td>No.</td>
<td>2 Years</td>
<td>neck</td>
<td>5 Months</td>
<td>2-3 cm</td>
<td>n =</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>-----</td>
<td>-------------</td>
<td>--------------------------------</td>
<td>----------</td>
<td>--------</td>
<td>-----</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>21</td>
<td>BKU-87</td>
<td>CBJ FC 10 Months</td>
<td>Head, ears and neck</td>
<td>5 Months</td>
<td>2-3 cm</td>
<td>n = 28</td>
<td>0</td>
</tr>
<tr>
<td>22</td>
<td>BKU-88</td>
<td>ND HF 2 Years</td>
<td>Around the eyes</td>
<td>5 Months</td>
<td>3 cm</td>
<td>n = 05</td>
<td>0</td>
</tr>
<tr>
<td>23</td>
<td>BKU-103</td>
<td>ND HF 1.6 Years</td>
<td>Trunk</td>
<td>3 Months</td>
<td>1.5-2 cm</td>
<td>n = 05</td>
<td>0</td>
</tr>
<tr>
<td>24</td>
<td>BKU-104</td>
<td>ND FC 10 Months</td>
<td>Neck and fore limbs</td>
<td>6 Months</td>
<td>1-2 cm</td>
<td>n = 12</td>
<td>0</td>
</tr>
<tr>
<td>25</td>
<td>BKU-116</td>
<td>CBJ FC 9 Months</td>
<td>Neck, fore limbs and belly</td>
<td>5 Months</td>
<td>2-3 cm</td>
<td>n = 24</td>
<td>0</td>
</tr>
<tr>
<td>26</td>
<td>BKU-119</td>
<td>ND FC 10 Months</td>
<td>Hind limbs and axilla</td>
<td>6 Months</td>
<td>3-4 cm</td>
<td>n = 34</td>
<td>1</td>
</tr>
<tr>
<td>27</td>
<td>BBM-9</td>
<td>Gir FC 10 Months</td>
<td>Fore limbs</td>
<td>4 Months</td>
<td>2-3 cm</td>
<td>n = 30</td>
<td>0</td>
</tr>
<tr>
<td>28</td>
<td>BBM-11</td>
<td>Gir HF 2 Years</td>
<td>Neck, dewlap and thorax</td>
<td>10 Months</td>
<td>2-3 cm</td>
<td>n = 18</td>
<td>0</td>
</tr>
<tr>
<td>29</td>
<td>BBM-13</td>
<td>CBJ BK 4 Years</td>
<td>Neck and back</td>
<td>10 Months</td>
<td>2-3 cm</td>
<td>n = 30</td>
<td>0</td>
</tr>
<tr>
<td>30</td>
<td>BBM-14</td>
<td>MBF (She buffalo) 4 Years</td>
<td>Tail base and peri anal region</td>
<td>4 Years</td>
<td>2-3 cm</td>
<td>n = 15</td>
<td>0</td>
</tr>
<tr>
<td>31</td>
<td>BBM-16</td>
<td>CBJ Cow 5 Years</td>
<td>All four teats</td>
<td>Months</td>
<td>2-3 cm</td>
<td>n = 15</td>
<td>1</td>
</tr>
<tr>
<td>32</td>
<td>BBM-18</td>
<td>CBJ Cow 5 Years</td>
<td>Fore limbs and shoulder</td>
<td>8 Months</td>
<td>2-3 cm</td>
<td>n = 35</td>
<td>0</td>
</tr>
<tr>
<td>33</td>
<td>BBM-19</td>
<td>CBJ Cow 5 Year</td>
<td>Udder and teats</td>
<td>8 Months</td>
<td>2-3 cm</td>
<td>n = 15</td>
<td>0</td>
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<tr>
<td>34</td>
<td>BBM-21</td>
<td>ND BK 4 Years</td>
<td>Peri anal region and tail</td>
<td>6 Months</td>
<td>2-3 cm</td>
<td>n = 15</td>
<td>0</td>
</tr>
<tr>
<td>35</td>
<td>BBM-23</td>
<td>CBJ BK 4 Years</td>
<td>Inguinal region</td>
<td>6 Months</td>
<td>2-3 cm</td>
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<td>CBJ Cow 5 Years</td>
<td>Teats only</td>
<td>6 Months</td>
<td>1-2 cm</td>
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<td>37</td>
<td>BBM-26</td>
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<td>Hind limbs</td>
<td>6 Months</td>
<td>2-3 cm</td>
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<td>0</td>
</tr>
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<td>38</td>
<td>BBM-28</td>
<td>ND BK 4 Years</td>
<td>Neck region</td>
<td>6 Months</td>
<td>2-4 cm</td>
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<td>0</td>
</tr>
<tr>
<td>39</td>
<td>BBM-29</td>
<td>CBJ HF 3 Years</td>
<td>Left axilla</td>
<td>5 Months</td>
<td>3-4 cm</td>
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<td>40</td>
<td>BBM-31</td>
<td>ND FC 9 Months</td>
<td>Ear and around eyes</td>
<td>3 Months</td>
<td>1-3 cm</td>
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<td>0</td>
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<tr>
<td>41</td>
<td>BBM-33</td>
<td>Gir HF 2 Years</td>
<td>Muzzle, cheek, eyes and ear</td>
<td>5 Months</td>
<td>1-1.5 cm</td>
<td>n = 15</td>
<td>0</td>
</tr>
<tr>
<td>42</td>
<td>BBM-40</td>
<td>CBJ FC 8 Months</td>
<td>Head and shoulder</td>
<td>3 Months</td>
<td>3-5 cm</td>
<td>n = 18</td>
<td>0</td>
</tr>
<tr>
<td>43</td>
<td>BBM-41</td>
<td>ND Bullock 3 Years</td>
<td>Neck and shoulder</td>
<td>5 Months</td>
<td>3-4 cm</td>
<td>n = 12</td>
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</tr>
<tr>
<td>44</td>
<td>BBM-43</td>
<td>CBJ BK</td>
<td>Fore limbs</td>
<td>4 Months</td>
<td>3-4 cm</td>
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<td>Case No.</td>
<td>Breed</td>
<td>Age</td>
<td>Location of Lesion</td>
<td>Duration</td>
<td>Size (cm)</td>
<td>n</td>
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<tr>
<td>----------</td>
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<tr>
<td>45</td>
<td>BBM-45</td>
<td>3 Years</td>
<td>Ears and neck region</td>
<td>5 Months</td>
<td>1-2 cm</td>
<td>30</td>
<td>1</td>
</tr>
<tr>
<td>46</td>
<td>NDA-3</td>
<td>2.5 years</td>
<td>Fore limb and thorax</td>
<td>5 Months</td>
<td>3-4 cm</td>
<td>22</td>
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</tr>
<tr>
<td>47</td>
<td>NDA-4</td>
<td>1 Year</td>
<td>Cheeks, ear tips and around the eyes</td>
<td>4 Months</td>
<td>3-4 cm</td>
<td>27</td>
<td>0</td>
</tr>
<tr>
<td>48</td>
<td>NDA-5</td>
<td>3 Years</td>
<td>Cheek, submandibular region and four limbs</td>
<td>6 Months</td>
<td>3-4 cm</td>
<td>55</td>
<td>0</td>
</tr>
<tr>
<td>49</td>
<td>NDA-6</td>
<td>2 Years</td>
<td>Whole body papillomatosis</td>
<td>6 Months</td>
<td>3-4 cm</td>
<td>&gt;100</td>
<td>0</td>
</tr>
<tr>
<td>50</td>
<td>NDA-11</td>
<td>2 Years</td>
<td>Neck, thorax and abdomen</td>
<td>6 Months</td>
<td>2-3 cm</td>
<td>75</td>
<td>0</td>
</tr>
<tr>
<td>51</td>
<td>NDA-34</td>
<td>3 Years</td>
<td>Whole body papillomatosis</td>
<td>6 Months</td>
<td>3-7 cm</td>
<td>56</td>
<td>0</td>
</tr>
<tr>
<td>52</td>
<td>NDA-36</td>
<td>12 Months</td>
<td>Inguinal region and medial aspect of the thigh</td>
<td>4 Months</td>
<td>3-5 cm</td>
<td>80</td>
<td>0</td>
</tr>
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<td>53</td>
<td>NDA-46</td>
<td>12 Months</td>
<td>Neck region Bilateral affection</td>
<td>6 Months</td>
<td>3-4 cm</td>
<td>12</td>
<td>1</td>
</tr>
<tr>
<td>54</td>
<td>NDA-50</td>
<td>5 Years</td>
<td>All four teats</td>
<td>5 Months</td>
<td>2-3 cm</td>
<td>16</td>
<td>0</td>
</tr>
<tr>
<td>55</td>
<td>NDA-54</td>
<td>11 Months</td>
<td>Inter-scapular region</td>
<td>6 Months</td>
<td>4-6 cm</td>
<td>60</td>
<td>0</td>
</tr>
<tr>
<td>56</td>
<td>NDA-56</td>
<td>3 Years</td>
<td>Neck region</td>
<td>6 Months</td>
<td>6 cm</td>
<td>01</td>
<td>0</td>
</tr>
<tr>
<td>57</td>
<td>NDA-57</td>
<td>12 Months</td>
<td>Back only(lumbar region)</td>
<td>5 Months</td>
<td>3-4 cm</td>
<td>12</td>
<td>0</td>
</tr>
<tr>
<td>58</td>
<td>NDA-60</td>
<td>2 Years</td>
<td>Distal hind legs</td>
<td>6 Months</td>
<td>3-4 cm</td>
<td>12</td>
<td>1</td>
</tr>
<tr>
<td>59</td>
<td>NDA-63</td>
<td>2 Years</td>
<td>Whole body (40% of body surface)</td>
<td>5 Months</td>
<td>2-3 cm</td>
<td>40</td>
<td>0</td>
</tr>
<tr>
<td>60</td>
<td>NDA-68</td>
<td>2 Years</td>
<td>Lumbar region</td>
<td>5 Months</td>
<td>2-5 cm</td>
<td>20</td>
<td>1</td>
</tr>
<tr>
<td>61</td>
<td>NDA-69</td>
<td>3 Years</td>
<td>Whole body (30% of body surface)</td>
<td>5 Months</td>
<td>3-5 cm</td>
<td>40</td>
<td>0</td>
</tr>
<tr>
<td>62</td>
<td>NDA-72</td>
<td>2 Years</td>
<td>Head, neck, limbs and trunk</td>
<td>6 Months</td>
<td>4-5 cm</td>
<td>42</td>
<td>0</td>
</tr>
<tr>
<td>63</td>
<td>NDA-74</td>
<td>2 Years</td>
<td>Axillae</td>
<td>6 Months</td>
<td>3-4 cm</td>
<td>20</td>
<td>0</td>
</tr>
<tr>
<td>64</td>
<td>NDA-75</td>
<td>5 Years</td>
<td>All four teats</td>
<td>5 Months</td>
<td>2-3 cm</td>
<td>17</td>
<td>0</td>
</tr>
<tr>
<td>65</td>
<td>NDA-77</td>
<td>ND MC</td>
<td>Eye lids, fore head, meatus</td>
<td>4 Months</td>
<td>2-5 cm</td>
<td>20</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>9 Months</td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>66</td>
<td>NDA-78</td>
<td>ND HF</td>
<td>2.5 Years</td>
<td>auditorius and axilla</td>
<td>4 Months</td>
<td>2-5 cm</td>
<td>n = 12</td>
</tr>
<tr>
<td>67</td>
<td>NDA-79</td>
<td>ND HF</td>
<td>1.5 Years</td>
<td></td>
<td>6 Months</td>
<td>2-5 cm</td>
<td>n = 12</td>
</tr>
<tr>
<td>68</td>
<td>NDA-80</td>
<td>CBJ HF</td>
<td>2 Years</td>
<td></td>
<td>5 Months</td>
<td>3-5 cm</td>
<td>n = 50</td>
</tr>
<tr>
<td>69</td>
<td>NDA-81</td>
<td>ND HF</td>
<td>3 Years</td>
<td>Both sides of the neck , dewlap and brisket</td>
<td>4 Months</td>
<td>2-5 cm</td>
<td>n = 32</td>
</tr>
<tr>
<td>70</td>
<td>NDA-83</td>
<td>HLX HF</td>
<td>3 Years</td>
<td>Neck region</td>
<td>4 Months</td>
<td>9 cm</td>
<td>n = 01</td>
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<td>71</td>
<td>NDA-84</td>
<td>ND HF</td>
<td>3 Years</td>
<td>Both sides of the neck , fore head and upper eye lids</td>
<td>4 Months</td>
<td>2-5 cm</td>
<td>n = 16</td>
</tr>
<tr>
<td>72</td>
<td>NDA-86</td>
<td>ND HF</td>
<td>2 Years</td>
<td>Head, neck and brisket</td>
<td>4 Months</td>
<td>3-4 cm</td>
<td>n = 16</td>
</tr>
<tr>
<td>73</td>
<td>NDA-87</td>
<td>CBJ Cow</td>
<td>4 Years</td>
<td>All four teats</td>
<td>4 Months</td>
<td>2-3 cm</td>
<td>n = 12</td>
</tr>
<tr>
<td>74</td>
<td>NDA-88</td>
<td>ND HF</td>
<td>3.5 Years</td>
<td>Both sides of the neck , dewlap and brisket</td>
<td>4 Months</td>
<td>2-5 cm</td>
<td>n = 16</td>
</tr>
<tr>
<td>75</td>
<td>NDA-89</td>
<td>HLX HF</td>
<td>1.5 Years</td>
<td>Head, neck and fore limbs</td>
<td>4 Months</td>
<td>4-7 cm</td>
<td>n = 30</td>
</tr>
<tr>
<td>76</td>
<td>NDA-91</td>
<td>ND HF</td>
<td>3 Years</td>
<td>Hind limbs</td>
<td>4 Months</td>
<td>2-3 cm</td>
<td>n = 17</td>
</tr>
<tr>
<td>77</td>
<td>NDA-93</td>
<td>HLX HF</td>
<td>3 Years</td>
<td>Eye lids, fore head, meatus auditorius and axilla</td>
<td>6 Months</td>
<td>3-5 cm</td>
<td>n = 24</td>
</tr>
<tr>
<td>78</td>
<td>NDA-95</td>
<td>ND HF</td>
<td>2.5 Years</td>
<td>Ventral abdomen and axilla</td>
<td>4 Months</td>
<td>2-5 cm</td>
<td>n = 16</td>
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<td>79</td>
<td>NDA-96</td>
<td>ND HF</td>
<td>20 Months</td>
<td>Whole body(30% body surface)</td>
<td>6 Months</td>
<td>2-5 cm</td>
<td>n = 26</td>
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<td>80</td>
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<td>ND HF</td>
<td>2.5 Years</td>
<td>Ingual region and inner aspect of the thigh</td>
<td>6 Months</td>
<td>3-4 cm</td>
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<td>81</td>
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<td>ND HF</td>
<td>20 Months</td>
<td>Whole body(40% body surface)</td>
<td>4 Months</td>
<td>2-5 cm</td>
<td>n = 40</td>
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<td>82</td>
<td>NDA-101</td>
<td>CBJ HF</td>
<td>3 Years</td>
<td>Face and fore limbs</td>
<td>6 Months</td>
<td>2-3 cm</td>
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<td>83</td>
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<td>CBJ HF</td>
<td>2 Years</td>
<td>Whole body(40% body surface)</td>
<td>4 Months</td>
<td>2-6 cm</td>
<td>n = 60</td>
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<tr>
<td>84</td>
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<td>2 Years</td>
<td>Axilla</td>
<td>6 Months</td>
<td>2-4 cm</td>
<td>n = 38</td>
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<td>NDA-107</td>
<td>HLX HF</td>
<td>2.5 Years</td>
<td>Eyelid, forehead, ear tips, neck and</td>
<td>6 Months</td>
<td>2-4 cm</td>
<td>n = 38</td>
</tr>
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<td>86</td>
<td>NDA-110</td>
<td>CBJ HF 2 Years</td>
<td>dewlap Whole body(40% body surface)</td>
<td>6 Months</td>
<td>2-6 cm</td>
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<td>87</td>
<td>NTP-11</td>
<td>CBJ FC 9 Months</td>
<td>Medial canthus of the eyes</td>
<td>4 Months</td>
<td>2-3 cm</td>
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<td>88</td>
<td>NTP-14</td>
<td>MB HF 3 Years</td>
<td>Outside the medial canthus of the eyes</td>
<td>7 Months</td>
<td>2-3 cm</td>
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<tr>
<td>89</td>
<td>NTP-20</td>
<td>CBJ Cow 5 Years</td>
<td>Teats only</td>
<td>7 Months</td>
<td>2-3 cm</td>
<td>n = 20</td>
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<tr>
<td>90</td>
<td>NTP-57</td>
<td>CBJ FC 10 Months</td>
<td>Right lateral abdomen and lumbar</td>
<td>2 Months</td>
<td>2.5-3 cm</td>
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<td>91</td>
<td>NTP-58</td>
<td>CBJ Sub adult Bull, 2 Years</td>
<td>Peri anal region and loin</td>
<td>2 Months</td>
<td>2.5-3 cm</td>
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<td>92</td>
<td>STP-6</td>
<td>Indigenous HF 2 Years</td>
<td>Perinium</td>
<td>4 Months</td>
<td>1-1.5 cm</td>
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<tr>
<td>93</td>
<td>STP-9</td>
<td>ND MC 8 Months</td>
<td>Around eyes and ear pinnae</td>
<td>2 Months</td>
<td>1.5-2 cm</td>
<td>n = 18</td>
<td>1</td>
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<td>94</td>
<td>STP-18</td>
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<td>Peri orbital area</td>
<td>4 Months</td>
<td>1.5 -2 cm</td>
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<td>STP-19</td>
<td>CBJ Cow 3 Years</td>
<td>Paragenital area(external genitalia)</td>
<td>3 Months</td>
<td>1-1.5 cm</td>
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<tr>
<td>96</td>
<td>STP-20</td>
<td>CBJ HF 1.5 Years</td>
<td>Axilla</td>
<td>3 Months</td>
<td>4-5 .5 cm</td>
<td>n = 12</td>
<td>1</td>
</tr>
<tr>
<td>97</td>
<td>STP-45</td>
<td>ND BK 4 Years</td>
<td>Neck and temporal region</td>
<td>5 Months</td>
<td>3-5 cm</td>
<td>n = 25</td>
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</tr>
<tr>
<td>98</td>
<td>STP-46</td>
<td>ND MC 11 Months</td>
<td>Hind foot and scrotal sack</td>
<td>5 Months</td>
<td>1-2.5 cm</td>
<td>n = 23</td>
<td>0</td>
</tr>
<tr>
<td>99</td>
<td>STP-47</td>
<td>CBJ HF 1.5 Years</td>
<td>Chest, back and hind limbs</td>
<td>5 Months</td>
<td>3-5 cm</td>
<td>n = 32</td>
<td>1</td>
</tr>
<tr>
<td>100</td>
<td>STP-48</td>
<td>RS Cow 3 Years</td>
<td>Around teat orifice(all four teats)</td>
<td>5 Months</td>
<td>1-2 cm</td>
<td>n = 22</td>
<td>1</td>
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</tbody>
</table>

Score -0 (zero) depicting no clinical alteration, neither reduction in size nor alteration of colour regression of warts, score-1, means onset of regression of warts through reduction in size, change of colour, drying or pelling, score-2, means complete recovery or disappearance of warts.

Except one cattle all ninety nine affected animals responded well to auto hemotherapy. There was complete clinical cure in 90 animals and in nine animals there were moderate recovery. The warts dried gradually, shrunk and shrivelled. The cauliflower like growths sloughed off leaving scars and cutaneous sores in few animals. The cutaneous sores were treated with topical multipurpose gel. The cauliflower like pedunculated or stalked
tumours responded well while warts which were smooth, flat or round did not respond that well with auto-hemotherapy.

Regression and or clinical alteration by autohemotherapy alone were seen as early as DPT-15 in 18% cases. Complete clinical cure started at DPT-45 in (n = 15) 15% cases and no clinical alteration was noted in (n = 19) 19% cases. At DPT -60 complete recovery was noted in (n = 18) 18% cases and clinical alteration and or regression was noted in 65 animals. At DPT-75 total recovery was 26, no clinical alteration was noted in two cases and partial to moderate regression was noted in 39 cases. Highest recovery was noted at DPT-90 with complete clinical cure in 31 animals and no clinical alteration was noted in one animal. Overall recovery rate with complete clinical cure was 90%, partial to moderate grade recovery was noted was 9% and no clinical alteration was noted in only 1% case. In control group of animals there was no clinical recovery but there was intermediate neo-formations in good number of animals.

5.4.2 Effect of combined Levamisole oral therapy along with autohemotherapy on bovine papillomatosis

Therapeutic response to autohemotherapy along with oral Levamisole therapy as studied on 50 spontaneous cases of clinical cutaneous papillomatosis has shown in table (Table-139).

Table-139: Effect of combined levamisole (oral therapy) and autohemotherapy on bovine papillomatosis (Clinical trial on 50 animals)

<table>
<thead>
<tr>
<th>Sl No</th>
<th>Animal ID</th>
<th>Category &amp; age of the animal</th>
<th>Anatomical location of wart</th>
<th>Duration of infection</th>
<th>Average size of warts</th>
<th>No of warts</th>
<th>Treatment result clinical recovery scores</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>STP-49</td>
<td>CBJ Cow 3 Years</td>
<td>Udder and front teats</td>
<td>5 Months</td>
<td>05-1.5 cm</td>
<td>n = 12</td>
<td>1 1 2 - - -</td>
</tr>
<tr>
<td>2</td>
<td>STP-50</td>
<td>ND FC 12 Months</td>
<td>Medial canthus of left eye and right ear pinna</td>
<td>5 Months</td>
<td>01-1.5 cm</td>
<td>n = 07</td>
<td>1 1 2 - - -</td>
</tr>
<tr>
<td>3</td>
<td>EMP-20</td>
<td>CBJ HF 1.5 Year</td>
<td>Lower abdomen</td>
<td>5 Months</td>
<td>1-1.5 cm</td>
<td>n = 07</td>
<td>1 1 2 - - -</td>
</tr>
<tr>
<td>4</td>
<td>EMP-21</td>
<td>CBJ Bull calf 11 Months</td>
<td>Fore limbs</td>
<td>5 Months</td>
<td>2-4 cm</td>
<td>n = 57</td>
<td>1 1 2 - - -</td>
</tr>
<tr>
<td>5</td>
<td>EMP-22</td>
<td>ND BK 3 Years</td>
<td>Right hind limb</td>
<td>4 Months</td>
<td>3-4.5 cm</td>
<td>n = 12</td>
<td>0 1 2 - - -</td>
</tr>
<tr>
<td>6</td>
<td>EMP-32</td>
<td>ND BK 4 Years</td>
<td>Head, neck and back</td>
<td>4 Months</td>
<td>2-4 cm</td>
<td>n = 23</td>
<td>1 1 2 - - -</td>
</tr>
<tr>
<td>7</td>
<td>EMP-33</td>
<td>ND MC 10 Months</td>
<td>Shoulder, neck and lumbar</td>
<td>4 Months</td>
<td>1-3 cm</td>
<td>n = 25</td>
<td>1 1 2 - - -</td>
</tr>
<tr>
<td>8</td>
<td>EMP-43</td>
<td>ND BK 2.5 Years</td>
<td>Shoulder and right fore limb</td>
<td>4 Months</td>
<td>1-1.5 cm</td>
<td>n = 21</td>
<td>0 1 2 - - -</td>
</tr>
<tr>
<td>9</td>
<td>EMP-44</td>
<td>ND BK</td>
<td>Sides of the</td>
<td>4 Months</td>
<td>2-5 cm</td>
<td>n = 21</td>
<td>1 1 2 - - -</td>
</tr>
<tr>
<td></td>
<td></td>
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<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10 EMP-45</td>
<td>CBJ Cow 4 Years</td>
<td>Teats only</td>
<td>4 Months</td>
<td>0.5 - 1 cm</td>
<td>n = 12</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>11 EMP-46</td>
<td>CBJ Cow 4 Years</td>
<td>Teats only</td>
<td>4 Months</td>
<td>0.5 - 1 cm</td>
<td>n = 12</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>12 EMP-50</td>
<td>ND BK 4 Years</td>
<td>Shoulder and fore limbs</td>
<td>4 Months</td>
<td>0.5-2 cm</td>
<td>n = 15</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>13 EMP-53</td>
<td>CBJ Cow 4 Years</td>
<td>Teats only</td>
<td>4 Months</td>
<td>0.5 - 1 cm</td>
<td>n = 16</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>14 EMP-55</td>
<td>CBJ Cow 4 Years</td>
<td>Teats only</td>
<td>4 Months</td>
<td>0.5 - 1 cm</td>
<td>n = 16</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>15 EMP-58</td>
<td>CBJ Cow 4 Years</td>
<td>Teat crest</td>
<td>4 Months</td>
<td>0.5 - 1 cm</td>
<td>n = 14</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>16 EMP-65</td>
<td>ND HP 3 Years</td>
<td>Lumbar and perianal region</td>
<td>3 Months</td>
<td>0.5 - 3 cm</td>
<td>n = 07</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>17 EMP-66</td>
<td>CBJ HF 1.5 Years</td>
<td>Limbs and trunk</td>
<td>4 Months</td>
<td>1-2 cm</td>
<td>n = 15</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>18 EMP-68</td>
<td>ND HP 2 Years</td>
<td>Fore limbs</td>
<td>5 Months</td>
<td>2-3 cm</td>
<td>n = 37</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>19 EMP-69</td>
<td>CBJ HF 1.5 Years</td>
<td>Hind limbs and base of the tail</td>
<td>4 Months</td>
<td>1-2 cm</td>
<td>n = 17</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>20 EMP-70</td>
<td>ND HP 2 Years</td>
<td>Chest, elbow and barrel</td>
<td>5 Months</td>
<td>2-3 cm</td>
<td>n = 22</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>21 EMP-71</td>
<td>ND HP 2 Years</td>
<td>Para orbital and fore limbs</td>
<td>4 Months</td>
<td>0.5-2 cm</td>
<td>n = 17</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>22 EMP-72</td>
<td>ND BK 3 Years</td>
<td>Neck and thorax</td>
<td>4 Months</td>
<td>3-5 cm</td>
<td>n = 27</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>23 HLY-48</td>
<td>CBJ HF, 2 Years</td>
<td>Cauliflower like warts left flank, axilla and left thigh, n=20, 2-3 cm</td>
<td>4 Months</td>
<td>2-3 cm</td>
<td>n = 20</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>24 HLY-54</td>
<td>CBJ HF, 3 Years</td>
<td>Axilla and medial aspect of right thigh</td>
<td>5 Months</td>
<td>2.5-3 cm</td>
<td>n = 23</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>25 HLY-64</td>
<td>Gir HF, 3 Years</td>
<td>Sessile and tag type warts on head, neck and face</td>
<td>4 Months</td>
<td>1-2 cm</td>
<td>n = 12</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>26 NTP-8</td>
<td>MBF (She buffalo), 4 Years</td>
<td>Frond type warts on teats</td>
<td>5 Months</td>
<td>1-2 cm</td>
<td>n = 12</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>27 NTP-32</td>
<td>ND MC, 11 Months</td>
<td>Black dot like warts on face and neck bilaterally</td>
<td>4 Months</td>
<td>0.5-0.8 cm</td>
<td>n = 25</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>28 NTP-33</td>
<td>RS HF, 2.5 Years</td>
<td>Pedunculated warts on neck and shoulder</td>
<td>4 Months</td>
<td>3-4 cm</td>
<td>n = 20</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>29 NTP-37</td>
<td>CBJ HF, 2.5 Years</td>
<td>Dome shaped warts on face, neck and body</td>
<td>4 Months</td>
<td>2-3 cm</td>
<td>n = 15</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>30 NTP-39</td>
<td>Gir HF, 3 Years</td>
<td>Cauliflower like warts on left upper eyelids, left jaw</td>
<td>5 Months</td>
<td>2-2.5 cm</td>
<td>n = 12</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>ID</td>
<td>Age</td>
<td>Location</td>
<td>Duration</td>
<td>Tumour Size</td>
<td>No.</td>
<td>Status</td>
<td></td>
</tr>
<tr>
<td>-----</td>
<td>-------</td>
<td>---------------------------</td>
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<td>--------</td>
<td></td>
</tr>
<tr>
<td>NTP-41</td>
<td>Gir HF, 1.5 Years</td>
<td>Flat, dome shaped warts on neck, throat and above the eye</td>
<td>4 Months</td>
<td>2-3 cm</td>
<td>n = 18</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>NTP-42</td>
<td>CBJ HF, 2.5 Years</td>
<td>Cauliflower like warts on tail base and hind legs below hock</td>
<td>5 Months</td>
<td>3-5 cm</td>
<td>n = 15</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>NTP-43</td>
<td>CBJ HF, 2.5 Years</td>
<td>Cauliflower like warts on fore head and hind leg</td>
<td>4 Months</td>
<td>2-3 cm</td>
<td>n = 21</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>NTP-44</td>
<td>CBJ HF, 2.5 Years</td>
<td>Cauliflower like warts on neck and shoulder</td>
<td>4 Months</td>
<td>2-3 cm</td>
<td>n = 8</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>NTP-45</td>
<td>ND HF, 2.5 Years</td>
<td>Cauliflower like warts on hind limbs below hock</td>
<td>4 Months</td>
<td>2-3 cm</td>
<td>n = 20</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>NTP-46</td>
<td>CBJ HF, 2.5 Years</td>
<td>Cauliflower like warts on hind limbs below hock</td>
<td>4 Months</td>
<td>2-3 cm</td>
<td>n = 16</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>NTP-47</td>
<td>CBJ FC, 10 Months</td>
<td>Dome shaped warts on right side of thorax and abdomen</td>
<td>4 Months</td>
<td>2-3 cm</td>
<td>n = 16</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>NTP-48</td>
<td>CBJ HF, 2.5 Years</td>
<td>Dome shaped warts on right neck and right fore limb</td>
<td>4 Months</td>
<td>2-3 cm</td>
<td>n = 16</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>NTP-49</td>
<td>ND BK, 4 Years</td>
<td>Cauliflower like warts around the scrotum, axilla and anus</td>
<td>4 Months</td>
<td>3-4 cm</td>
<td>n = 15</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>NTP-50</td>
<td>CBJ Cow, 3 Years</td>
<td>Sessile type warts on neck, chest and belly, n=35, 3-4 cm</td>
<td>4 Months</td>
<td>2-3 cm</td>
<td>n = 35</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>NTP-51</td>
<td>ND BK, 3 Years</td>
<td>Cauliflower like warts fore limbs, back and belly, n=15, 3-7 cm</td>
<td>5 Months</td>
<td>3-7 cm</td>
<td>n = 15</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>NTP-52</td>
<td>CBJ HF, 2.5 Years</td>
<td>Cauliflower like warts left neck and shoulder</td>
<td>5 Months</td>
<td>2.5-3 cm</td>
<td>n = 7</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>NTP-53</td>
<td>CBJ MC, 4 Years</td>
<td>Cauliflower like warts on left flank, axilla and left thigh</td>
<td>5 Months</td>
<td>3-4 cm</td>
<td>n = 15</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>NTP-54</td>
<td>CBJ Cow, 3 Years</td>
<td>Cauliflower like warts on head, neck, left fore amput and thigh</td>
<td>4 Months</td>
<td>3-4 cm</td>
<td>n = 15</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>NTP-55</td>
<td>CBJ HF, 2 Years</td>
<td>Cauliflower like warts left flank, axilla and left thigh</td>
<td>5 Months</td>
<td>2-3 cm</td>
<td>n = 20</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>NTP-56</td>
<td>CBJ HF, 3 Years</td>
<td>Axilla and medial aspect of right thigh</td>
<td>4 Months</td>
<td>1-3 cm</td>
<td>n = 23</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>
Score -0 (zero) denotes no clinical alteration, neither reduction in size nor alteration of colour regression of warts, score-1, means onset of regression of warts through reduction in size, change of colour, drying or pelling, score-2, means complete recovery or disappearance of warts.

Regression and or clinical alteration with combined levamisole and self blood therapy started as early as 15 DPT in (n = 31) 62% cases and at DPT-30 there was partial clinical regression in cent percent cases. Complete clinical cure was noted in 38 number of treated cases at DPT-45 with partial to moderate clinical regression in rest of the treated animals (n = 12). At DPT-60 there was complete clinical cure in eight animals, and at DPT-75 rest two animals recovered. There was 100% clinical recovery with combined levamisole and autohemotherapy.

5.5 Immunomodulation as a treatment mode of treating bovine papillomatosis

5.5.1 Levamisole oral therapy on cutaneous papillomatosis

Effect of levamisole oral therapy on cutaneous papillomatosis has been presented in table (Table-140)

<table>
<thead>
<tr>
<th>Sl No</th>
<th>Animal No</th>
<th>Breed, Age &amp; Sex</th>
<th>Location / site of wart</th>
<th>No of warts</th>
<th>Diameter/size of warts</th>
<th>Response of treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>PRL-22</td>
<td>RS HF, 16 Months</td>
<td>Around eyes and ears</td>
<td>20</td>
<td>1-3 cm</td>
<td>Regression started at DPT-15 and complete regression at 30 DPT</td>
</tr>
<tr>
<td>2</td>
<td>CBR-02</td>
<td>Upgraded Sahiwal HF, 2 Years</td>
<td>Around eyes and face</td>
<td>9</td>
<td>2-3 cm</td>
<td>Regression started at DPT-15 and complete regression at 30 DPT</td>
</tr>
<tr>
<td>3</td>
<td>BDN-26</td>
<td>Gir HF, 16 Months</td>
<td>Neck and elbow point</td>
<td>16</td>
<td>3-6 cm</td>
<td>Growth prevented but no clinical cure even at DPT 60</td>
</tr>
<tr>
<td>4</td>
<td>BDN-27</td>
<td>ND HF, 2.5 Years</td>
<td>Fore limbs and belly</td>
<td>16</td>
<td>3-6 cm</td>
<td>Regression started at DPT-15 and complete regression at 40 DPT</td>
</tr>
<tr>
<td>5</td>
<td>BDN-42</td>
<td>CBJ HF, 16 Months</td>
<td>Head, ears, eye lids and around the eyes</td>
<td>25</td>
<td>3-4cm</td>
<td>Regression started at DPT-15 and complete regression at 35 DPT</td>
</tr>
<tr>
<td>6</td>
<td>NDA-6</td>
<td>ND HF,</td>
<td>Generalised warts</td>
<td>&gt;100</td>
<td>3-4 cm</td>
<td>Regression started at DPT-10 and</td>
</tr>
<tr>
<td>Case</td>
<td>Age</td>
<td>Affected Area</td>
<td>Size</td>
<td>Recovery Time</td>
<td>Details</td>
<td></td>
</tr>
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<td>-------</td>
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<td>----------------------------------------</td>
<td>------</td>
<td>---------------</td>
<td>---------</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>2 Y</td>
<td>Muzzle, ventral abdominal region and hind limbs</td>
<td>n = 12</td>
<td>2-5 cm</td>
<td>Regression started at DPT-10 and complete regression at 30 DPT</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>3 Y</td>
<td>Dome shaped warts on all four teats</td>
<td>n = 09</td>
<td>2-3 cm</td>
<td>Regression started at DPT-15 and complete regression at 60 DPT</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>5 Y</td>
<td>Fore limbs, back and belly</td>
<td>n = 55</td>
<td>3-7 cm</td>
<td>Regression of the wart to small size after 3 weeks and all warts disappeared after 60 days except few large warts (no complete clinical cure). Surgical excision was mandatory for complete clinical cure</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>2 Y</td>
<td>Right shoulder and right fore limb</td>
<td>n = 12</td>
<td>2-3 cm</td>
<td>Regression started at DPT-15 and complete regression at 30 DPT</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>1.5 Y</td>
<td>Ano-genital region</td>
<td>n = 12</td>
<td>1.5-2.5 cm</td>
<td>Regression started at DPT-15 and complete regression at 40 DPT</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>3 Y</td>
<td>Neck, dewlap and back</td>
<td>n = 12</td>
<td>1-3 cm</td>
<td>Regression started at DPT-15 and complete regression at 35 DPT</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>3 Y</td>
<td>Left neck and back</td>
<td>n = 20</td>
<td>2-3 cm</td>
<td>Regression started at DPT-15 and complete regression at 50 DPT</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>3.5 Y</td>
<td>Head, neck and trunk</td>
<td>n = 12</td>
<td>1-3 cm</td>
<td>Regression started at DPT-15 and no neo-formation occurred. Complete regression at 40 DPT</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>5 Y</td>
<td>All four teats</td>
<td>n = 16</td>
<td>3-4 cm</td>
<td>Regression started at DPT-15 and complete regression at 45 DPT</td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>19 M</td>
<td>Ventrabdomen and left thigh</td>
<td>n = 16</td>
<td>3-4 cm</td>
<td>Regression started at DPT-15 and complete regression at 50 DPT</td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>4 Y</td>
<td>Teats and around external genitals</td>
<td>n = 15</td>
<td>2-3 cm</td>
<td>Regression started at DPT-15 and complete regression at 60 DPT</td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>4 Y</td>
<td>All four teats</td>
<td>n = 12</td>
<td>1-3 cm</td>
<td>Regression started at DPT-15 but no complete clinical cure even at 90 DPT</td>
<td></td>
</tr>
<tr>
<td>19</td>
<td>17 M</td>
<td>Neck and shoulder</td>
<td>n = 25</td>
<td>2-4 cm</td>
<td>Regression started at DPT-10 and complete regression at 50 DPT</td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>5 Y</td>
<td>Udder and teats</td>
<td>n = 15</td>
<td>2-3 cm</td>
<td>Regression started at DPT-25 but no complete clinical recovery seen till 90 DPT. Needed surgical excision for complete cure</td>
<td></td>
</tr>
<tr>
<td>21</td>
<td>2 Y</td>
<td>Face, eye lids, ears and neck</td>
<td>n = 15</td>
<td>2-3 cm</td>
<td>Regression started at DPT-15 and complete regression at 50 DPT</td>
<td></td>
</tr>
<tr>
<td>22</td>
<td>3 Y</td>
<td>Left thigh and axilla</td>
<td>n = 25</td>
<td>1-3 cm</td>
<td>Regression started at DPT-15 and complete regression at 60 DPT</td>
<td></td>
</tr>
<tr>
<td>23</td>
<td>3 Y</td>
<td>Hind limbs and perineum</td>
<td>n = 30</td>
<td>2-3 cm</td>
<td>Regression started at DPT-15 and complete regression at 60 DPT</td>
<td></td>
</tr>
<tr>
<td>24</td>
<td>16 M</td>
<td>Whole body affection</td>
<td>n = 120</td>
<td>1-5 cm</td>
<td>Regression started at DPT-10 and complete regression at 50 DPT</td>
<td></td>
</tr>
<tr>
<td>25</td>
<td>10 M</td>
<td>Limbs and body</td>
<td>n = 130</td>
<td>2-4 cm</td>
<td>Regression started at DPT-15 and complete regression at 60 DPT</td>
<td></td>
</tr>
<tr>
<td>26</td>
<td>26 M</td>
<td>Whole body affection</td>
<td>n = 120</td>
<td>1-5 cm</td>
<td>Regression started at DPT-15 and complete regression at 50 DPT</td>
<td></td>
</tr>
<tr>
<td>27</td>
<td>2.5 Y</td>
<td>Head, neck and belly</td>
<td>n = 20</td>
<td>2-4 cm</td>
<td>Regression started at DPT-15 and complete regression at 50 DPT</td>
<td></td>
</tr>
<tr>
<td>28</td>
<td>3 Y</td>
<td>Neck and shoulder</td>
<td>n = 20</td>
<td>1-3 cm</td>
<td>Regression started at DPT-15 and complete regression at 60 DPT</td>
<td></td>
</tr>
<tr>
<td>29</td>
<td>3 Y</td>
<td>Lumbar and tail base</td>
<td>n = 18</td>
<td>3-4 cm</td>
<td>Regression started at DPT-15 and complete regression at 60 DPT</td>
<td></td>
</tr>
<tr>
<td>30</td>
<td>10 M</td>
<td>Forehead and fore</td>
<td>n = 15</td>
<td>2-3 cm</td>
<td>Regression started at DPT-10 and</td>
<td></td>
</tr>
<tr>
<td>No.</td>
<td>Code</td>
<td>Breed</td>
<td>Age</td>
<td>Site</td>
<td>Regressed Size</td>
<td>Regressed Stage</td>
</tr>
<tr>
<td>-----</td>
<td>-------</td>
<td>-------</td>
<td>-----</td>
<td>------</td>
<td>----------------</td>
<td>----------------</td>
</tr>
<tr>
<td>31</td>
<td>HWH-13</td>
<td>CBJ HF</td>
<td>2.5 Years</td>
<td>10 Months</td>
<td>limbs</td>
<td>n = 13</td>
</tr>
<tr>
<td>32</td>
<td>HWH-17</td>
<td>CBJ MC</td>
<td>10 Months</td>
<td>Hind limbs</td>
<td>n = 23</td>
<td>3-4 cm</td>
</tr>
<tr>
<td>33</td>
<td>HWH-21</td>
<td>CBJ HF</td>
<td>2.5 Years</td>
<td>All four teats</td>
<td>n = 18</td>
<td>1-2 cm</td>
</tr>
<tr>
<td>34</td>
<td>HLY-3</td>
<td>Gir HF</td>
<td>2 Years</td>
<td>Around vulva and anus</td>
<td>n = 14</td>
<td>2-3 cm</td>
</tr>
<tr>
<td>35</td>
<td>HLY-5</td>
<td>CBJ HF</td>
<td>2 Years</td>
<td>Neck, chest and belly</td>
<td>n = 56</td>
<td>3-5 cm</td>
</tr>
<tr>
<td>36</td>
<td>HLY-7</td>
<td>Gir FC</td>
<td>10 Months</td>
<td>Mouth, eyes and neck</td>
<td>n = 30</td>
<td>3-4 cm</td>
</tr>
<tr>
<td>37</td>
<td>HLY-9</td>
<td>ND BK</td>
<td>5 Years</td>
<td>Posterior aspect of thigh and at tail base</td>
<td>n = 50</td>
<td>1-2 cm</td>
</tr>
<tr>
<td>38</td>
<td>HLY-13</td>
<td>CBJ Cow</td>
<td>3 Years</td>
<td>Face and ear pinna</td>
<td>n = 20</td>
<td>5-8 cm</td>
</tr>
<tr>
<td>39</td>
<td>HLY-15</td>
<td>Gir HF</td>
<td>2 Years</td>
<td>Neck and back</td>
<td>n = 14</td>
<td>2-3 cm</td>
</tr>
<tr>
<td>40</td>
<td>HLY-20</td>
<td>ND BK</td>
<td>5 Years</td>
<td>Lower back and belly</td>
<td>n = 16</td>
<td>1-2 cm</td>
</tr>
<tr>
<td>41</td>
<td>HLY-24</td>
<td>Gir FC</td>
<td>10 Months</td>
<td>Poll region and both sides of the neck</td>
<td>n = 17</td>
<td>3-5 cm</td>
</tr>
<tr>
<td>42</td>
<td>HLY-26</td>
<td>ND BK</td>
<td>5 Years</td>
<td>Neck and shoulder</td>
<td>n = 20</td>
<td>5-8 cm</td>
</tr>
<tr>
<td>43</td>
<td>HLY-29</td>
<td>Gir FC</td>
<td>10 Months</td>
<td>Eyes and shoulder</td>
<td>n = 20</td>
<td>5-8 cm</td>
</tr>
<tr>
<td>44</td>
<td>HLY-34</td>
<td>Gir HF</td>
<td>2 Years</td>
<td>Eyes and face</td>
<td>n = 20</td>
<td>5-8 cm</td>
</tr>
<tr>
<td>45</td>
<td>HLY-36</td>
<td>Gir HF</td>
<td>2 Years</td>
<td>Poll region and both sides of the neck</td>
<td>n = 14</td>
<td>2-3 cm</td>
</tr>
<tr>
<td>46</td>
<td>HLY-40</td>
<td>ND MC</td>
<td>8 Months</td>
<td>Face, neck and dewlap</td>
<td>n = 40</td>
<td>1-2 cm</td>
</tr>
<tr>
<td>47</td>
<td>HLY-42</td>
<td>CBJ HF</td>
<td>2.5 Years</td>
<td>Face and ear pinna</td>
<td>n = 30</td>
<td>3-4 cm</td>
</tr>
<tr>
<td>48</td>
<td>HLY-45</td>
<td>CBJ HF</td>
<td>1.5 Years</td>
<td>Face and ear pinna</td>
<td>n = 20</td>
<td>5-8 cm</td>
</tr>
<tr>
<td>49</td>
<td>HLY-49</td>
<td>ND MC</td>
<td>8 Months</td>
<td>Ear base, neck and fore limbs</td>
<td>n = 30</td>
<td>3-4 cm</td>
</tr>
<tr>
<td>50</td>
<td>HLY-53</td>
<td>ND HF</td>
<td>2 Years</td>
<td>Head, neck and back</td>
<td>n = 30</td>
<td>3-4 cm</td>
</tr>
</tbody>
</table>

Evaluation of immunomodulation by levamisole as oral therapy for the regression of bovine cutaneous papillomatosis revealed 82% effectiveness in regards to complete clinical cure. No clinical alteration, cure or regression was observed in control animals.

Regression of lesions started with levamisole oral therapy as early as DPT-10, n = 6, 12%, at DPT-15, n = 37, 76%, at DPT-20, n = 2, 4%, at DPT-25, n = 1, 2%, DPT-25, n = 1, 2%, No clinical alteration even at DPT-30, n = 3, 6%
Complete clinical cure was noted at DPT-30, (n = 4, ) 10%, at DPT-35, (n = 3, ) 4%, at DPT-40, (n = 3, ) 6%, at DPT-45, (n = 1, ) 2%, at DPT-50, (n = 15, ) 30%, at DPT-60, (n = 15, ) 30%. Incomplete clinical cure even at DPT-90, noted in (n = 6, ) 12% cases and no regression/no clinical cure even at DPT-90, was noted in (n = 3, ) 6% cases.

Response to treatment on CCWT and CTP by Levamisole oral therapy as studied gave complete regression/complete clinical cure- 82%, incomplete clinical cure that needed surgical excision, n=6, 12% and overall response to Levamisole oral therapy was (n = 47), 94%.

5.5.2 Levamisole parenteral therapy

Therapeutic response to Levamisole parenteral therapy as studied on 50 spontaneous cases of clinical cutaneous papillomatosis has shown in table (Table-141). Regression and or clinical alteration were seen as early as at DPT-5 and regression was noted in seven cases. Remarkable results were observed with dissolution of all the warts were observed in twenty numbers of cases at DPT 25. Complete clinical cure was noted as early as at DPT-20 and complete regression was noted in 21 number of treated cases, at DPT-25, four number of cases recovered and at DPT-30 there was complete clinical cure in 10 number of treated cases (Figure-71, E&F). Overall complete clinical cure was recorded in (n = 44) 88% cases with in DPT-60. No clinical alteration even at DPT-90 was noted in four numbers of cases. Although in two cases there was moderate grade recovery, surgical excision was needed for complete clinical cure.

Table-141: Levamisole parenteral therapy a trial on fifty (n = 50) cutaneous wart infected cattle

<table>
<thead>
<tr>
<th>Sl No</th>
<th>Animal No</th>
<th>Breed, Age &amp; Sex</th>
<th>Location / site of wart</th>
<th>No of warts</th>
<th>Diameter/ size of warts</th>
<th>Response of treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>MSD-16</td>
<td>CBJ Cow, 5 Years</td>
<td>Hind teats</td>
<td>n = 5</td>
<td>2-6 cm</td>
<td>Regression started at DPT-15 and completed at DPT-50</td>
</tr>
<tr>
<td>2</td>
<td>MSD-29</td>
<td>CBJ Cow, 3 Years</td>
<td>Lower abdomen and axilla</td>
<td>n&gt;30</td>
<td>2-5 cm</td>
<td>Regression started at DPT-10 and complete clinical cure at DPT-40</td>
</tr>
<tr>
<td>3</td>
<td>MSD-32</td>
<td>Gir sub adult Bull, 3 Years</td>
<td>Scrotal base and inguinal region</td>
<td>n = 14</td>
<td>3-4 cm</td>
<td>Regression started at DPT-15 and complete clinical cure at DPT-30</td>
</tr>
<tr>
<td>4</td>
<td>BDN-13</td>
<td>CBJ HF 2.5 Years</td>
<td>Fore limbs, face and right neck</td>
<td>n = 21</td>
<td>2-4 cm</td>
<td>Regression started at DPT-10 and complete clinical cure at DPT-45</td>
</tr>
<tr>
<td>5</td>
<td>NTP-31</td>
<td>ND Sub adult Bull, 2 Years</td>
<td>Face, eyelids and left ear pinna</td>
<td>n = 14</td>
<td>3.5-4 cm</td>
<td>Regression started at DPT-15 and complete clinical cure at DPT-40</td>
</tr>
<tr>
<td>6</td>
<td>NDA-19</td>
<td>CBJ HF 2.5 Years</td>
<td>Face, neck and dewlap</td>
<td>n = 21</td>
<td>3-4 cm</td>
<td>Regression started at DPT-15 and complete clinical cure at DPT-30</td>
</tr>
<tr>
<td>7</td>
<td>NDA-62</td>
<td>ND HF 3 Years</td>
<td>Head, neck and dewlap</td>
<td>n = 16</td>
<td>3-5 cm</td>
<td>Regression started at DPT-10 and complete clinical cure at DPT-30</td>
</tr>
<tr>
<td>No.</td>
<td>Code</td>
<td>Breed</td>
<td>Age</td>
<td>Location</td>
<td>Tumor Size</td>
<td>Regression</td>
</tr>
<tr>
<td>-----</td>
<td>------</td>
<td>-------</td>
<td>-----</td>
<td>----------</td>
<td>------------</td>
<td>------------</td>
</tr>
<tr>
<td>8</td>
<td>HWH-08</td>
<td>ND MC</td>
<td>12 Months</td>
<td>Head, neck, eyes and fore limbs</td>
<td>n = 30</td>
<td>2-3 cm</td>
</tr>
<tr>
<td>9</td>
<td>HWH-09</td>
<td>CBJ HF</td>
<td>2 Years</td>
<td>Below the neck</td>
<td>n = 16</td>
<td>1-1.5 cm</td>
</tr>
<tr>
<td>10</td>
<td>HWH-15</td>
<td>CBJ HF</td>
<td>3 Years</td>
<td>Neck, dewlap and left fore limb</td>
<td>n = 23</td>
<td>3-5 cm</td>
</tr>
<tr>
<td>11</td>
<td>HWH-19</td>
<td>CBJ HF</td>
<td>3 Years</td>
<td>Face, neck, back and brisket</td>
<td>n = 10</td>
<td>3-4 cm</td>
</tr>
<tr>
<td>12</td>
<td>BBM-8</td>
<td>HLY Cow</td>
<td>4 years</td>
<td>Para genital region and Linea ulba</td>
<td>n = 15</td>
<td>2-3 cm</td>
</tr>
<tr>
<td>13</td>
<td>BBM-10</td>
<td>Gir HF</td>
<td>2.5 Years</td>
<td>Head, neck and dewlap</td>
<td>n = 15</td>
<td>1-3 cm</td>
</tr>
<tr>
<td>14</td>
<td>BBM-12</td>
<td>CBJ FC</td>
<td>9 Months</td>
<td>Fore limbs and shoulder region</td>
<td>n&gt;30</td>
<td>1-3 cm</td>
</tr>
<tr>
<td>15</td>
<td>HLY-55</td>
<td>ND HF</td>
<td>2 Years</td>
<td>Face, neck and dewlap</td>
<td>n = 60</td>
<td>1-2 cm</td>
</tr>
<tr>
<td>16</td>
<td>HLY-59</td>
<td>CBJ HF</td>
<td>24 Months</td>
<td>Lower thoracic region, back and belly</td>
<td>n = 55</td>
<td>1-2 cm</td>
</tr>
<tr>
<td>17</td>
<td>HLY-61</td>
<td>Gir FC</td>
<td>10 Months</td>
<td>Face, neck and dewlap</td>
<td>n = 20</td>
<td>5-8 cm</td>
</tr>
<tr>
<td>18</td>
<td>HLY-63</td>
<td>Upgraded Sahiwal HF</td>
<td>3 Years</td>
<td>Face, neck and dewlap</td>
<td>n=14</td>
<td>2-3 cm</td>
</tr>
<tr>
<td>19</td>
<td>HLY-65</td>
<td>CBJ HF</td>
<td>2 Years</td>
<td>Hind limbs and perineum</td>
<td>n = 20</td>
<td>5-8 cm</td>
</tr>
<tr>
<td>20</td>
<td>HLY-68</td>
<td>Gir HF</td>
<td>2 Years</td>
<td>Head, neck and back</td>
<td>n = 30</td>
<td>3-4 cm</td>
</tr>
<tr>
<td>21</td>
<td>HLY-71</td>
<td>CBJ Cow</td>
<td>3 Years</td>
<td>Ear tips, neck and fore limbs</td>
<td>n = 20</td>
<td>5-8 cm</td>
</tr>
<tr>
<td>22</td>
<td>HLY-74</td>
<td>Gir FC</td>
<td>10 Months</td>
<td>Back and belly</td>
<td>n = 14</td>
<td>2-3 cm</td>
</tr>
<tr>
<td>23</td>
<td>HLY-76</td>
<td>Upgraded Sahiwal HF</td>
<td>3 Years</td>
<td>Neck, chest and belly</td>
<td>n = 20</td>
<td>5-8 cm</td>
</tr>
<tr>
<td>24</td>
<td>HLY-79</td>
<td>CBJ HF</td>
<td>24 Months</td>
<td>Neck, left lower fore limb and back</td>
<td>n = 12</td>
<td>1-2 cm</td>
</tr>
<tr>
<td>25</td>
<td>HLY-82</td>
<td>Gir HF</td>
<td>2 Years</td>
<td>Ear pinna, neck and fore limbs</td>
<td>n = 20</td>
<td>5-8 cm</td>
</tr>
<tr>
<td>26</td>
<td>HLY-85</td>
<td>CBJ Cow</td>
<td>3 Years</td>
<td>Face, neck and dewlap</td>
<td>n = 45</td>
<td>1-2 cm</td>
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<tr>
<td>27</td>
<td>HLY-87</td>
<td>CBJ Cow</td>
<td>3 Years</td>
<td>Hind limbs and base of the tail</td>
<td>n = 20</td>
<td>5-8 cm</td>
</tr>
<tr>
<td>28</td>
<td>WMP-4</td>
<td>ND BK</td>
<td>4 Years</td>
<td>Both sides of the neck</td>
<td>n = 10</td>
<td>2-3 cm</td>
</tr>
<tr>
<td>29</td>
<td>WMP-5</td>
<td>ND MC</td>
<td>11 Months</td>
<td>Face and fore limbs</td>
<td>n = 18</td>
<td>1-3 cm</td>
</tr>
<tr>
<td>30</td>
<td>WMP-6</td>
<td>ND HF</td>
<td>Fore limbs</td>
<td>n = 20</td>
<td>1.5-2 cm</td>
<td>Regression started at DPT-10 and complete clinical cure</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td>---</td>
<td>---</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 Years</td>
<td>Neck and hump</td>
<td>n = 08</td>
<td>0.5-1 cm</td>
<td>Regression started at DPT-5 and complete clinical cure at DPT-15</td>
<td></td>
<td></td>
</tr>
<tr>
<td>31</td>
<td>WMP-7</td>
<td>CBJ HF 3 Years</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Shoulder</td>
<td>n = 16</td>
<td>2-3 cm</td>
<td>Regression started at DPT-15 and complete clinical cure at DPT-25</td>
<td></td>
<td></td>
</tr>
<tr>
<td>32</td>
<td>WMP-8</td>
<td>CBJ FC 10 Months</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Udder and teats</td>
<td>n = 20</td>
<td>1.5-2 cm</td>
<td>Regression started at DPT-15 and complete clinical cure at DPT-40</td>
<td></td>
<td></td>
</tr>
<tr>
<td>33</td>
<td>WMP-9</td>
<td>ND Cow 4 Years</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sternum</td>
<td>n = 14</td>
<td>3-4 cm</td>
<td>Regression started at DPT-10 and complete clinical cure at DPT-20</td>
<td></td>
<td></td>
</tr>
<tr>
<td>34</td>
<td>WMP-21</td>
<td>CBJ HF 2 Years</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Fore limbs and back</td>
<td>n = 21</td>
<td>1-1.5 cm</td>
<td>Regression started at DPT-10 and complete clinical cure at DPT-20</td>
<td></td>
<td></td>
</tr>
<tr>
<td>35</td>
<td>WMP-22</td>
<td>ND MC 8 Months</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Shoulder</td>
<td>n = 16</td>
<td>2-3 cm</td>
<td>Regression started at DPT-15 and complete clinical cure at DPT-25</td>
<td></td>
<td></td>
</tr>
<tr>
<td>36</td>
<td>WMP-29</td>
<td>CBJ HF 2 Years</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Fore limbs and back</td>
<td>n = 25</td>
<td>1-1.5 cm</td>
<td>Regression started at DPT-10 and complete clinical cure at DPT-20</td>
<td></td>
<td></td>
</tr>
<tr>
<td>37</td>
<td>WMP-36</td>
<td>CBJ HF 2 Years</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Head and sternum</td>
<td>n = 25</td>
<td>1-1.5 cm</td>
<td>Regression started at DPT-10 and complete clinical cure at DPT-20</td>
<td></td>
<td></td>
</tr>
<tr>
<td>38</td>
<td>WMP-37</td>
<td>ND BK 3 Years</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Head, shoulder and back</td>
<td>n = 24</td>
<td>3-4 cm</td>
<td>Regression started at DPT-10 and complete clinical cure at DPT-30</td>
<td></td>
<td></td>
</tr>
<tr>
<td>39</td>
<td>WMP-38</td>
<td>ND BK 3 Years</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Shoulder and right fore leg</td>
<td>n = 35</td>
<td>1-1.5 cm</td>
<td>Regression started at DPT-5 and complete clinical cure at DPT-20</td>
<td></td>
<td></td>
</tr>
<tr>
<td>40</td>
<td>WMP-39</td>
<td>CBJ HF 2 Years</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Back and belly</td>
<td>n = 55</td>
<td>1-1.5 cm</td>
<td>Regression started at DPT-10 and complete clinical cure at DPT-20</td>
<td></td>
<td></td>
</tr>
<tr>
<td>41</td>
<td>WMP-44</td>
<td>ND MC 14 Months</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Hind limbs</td>
<td>n =14</td>
<td>2-3cm</td>
<td>Regression started at DPT-10 and complete clinical cure at DPT-20</td>
<td></td>
<td></td>
</tr>
<tr>
<td>42</td>
<td>WMP-45</td>
<td>CBJ HF 2 Years</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Back and belly</td>
<td>n = 55</td>
<td>2-3cm</td>
<td>Regression started at DPT-10 and complete clinical cure at DPT-30</td>
<td></td>
<td></td>
</tr>
<tr>
<td>43</td>
<td>WMP-46</td>
<td>Gir HF 2 Years</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Neck and inter scapular region</td>
<td>n = 20</td>
<td>1-3 cm</td>
<td>Regression started at DPT-10 and complete clinical cure at DPT-20</td>
<td></td>
<td></td>
</tr>
<tr>
<td>44</td>
<td>EMP-75</td>
<td>ND BK 3 Years</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Left hind thigh and perineum</td>
<td>n = 15</td>
<td>1-1.5 cm</td>
<td>Regression started at DPT-10 and complete clinical cure at DPT-30</td>
<td></td>
<td></td>
</tr>
<tr>
<td>45</td>
<td>EMP-77</td>
<td>ND BK 3 Years</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Neck and thorax</td>
<td>n = 13</td>
<td>1-2 cm</td>
<td>Regression started at DPT-5 and complete clinical cure at DPT-20</td>
<td></td>
<td></td>
</tr>
<tr>
<td>46</td>
<td>EMP-78</td>
<td>ND HF 2 Years</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Lower limbs and ear tips</td>
<td>n = 12</td>
<td>1-2 cm</td>
<td>Regression started at DPT-10 and complete clinical cure at DPT-20</td>
<td></td>
<td></td>
</tr>
<tr>
<td>47</td>
<td>EMP-83</td>
<td>ND BK 3 Years</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Neck and ear pinna</td>
<td>n = 12</td>
<td>1-1.5 cm</td>
<td>Regression started at DPT-15 and complete clinical cure at DPT-20</td>
<td></td>
<td></td>
</tr>
<tr>
<td>48</td>
<td>EMP-84</td>
<td>ND BK 3 Years</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Neck and thorax</td>
<td>n = 12</td>
<td>1-1.5 cm</td>
<td>Regression started at DPT-5 and complete clinical cure at DPT-20</td>
<td></td>
<td></td>
</tr>
<tr>
<td>49</td>
<td>EMP-85</td>
<td>ND FC 9 Months</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Whole body</td>
<td>n = 54</td>
<td>1-2.5 cm</td>
<td>Regression started at DPT-10 and complete clinical cure at DPT-30</td>
<td></td>
<td></td>
</tr>
<tr>
<td>50</td>
<td>EMP-86</td>
<td>ND HF 18 Months</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Face</td>
<td>n = 12</td>
<td>1-2 cm</td>
<td>Regression started at DPT-5 and complete clinical cure at DPT-20</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Summary of Levamisole parenteral therapy:**

Regression of lesions started at DPT-5, n=5, 14%, DPT-10, n=28, 56% and at DPT-15, n=11, 22%, No clinical alteration, n=4, 8%, even at DPT-30
Complete clinical cure: n = 44, 88%, Incomplete clinical cure, n=2, 4%. Complete regression at DPT-15, n=1, 2%, at DPT-20, n=21, 42%, at DPT-25, n=3, 6%, at DPT-30, n=10, 20%, at DPT-35, n=1, 2%, at DPT-40, n=4, 8%, DPT-50, n=1,2%, DPT-60, n=3,6%.

Overall response to treatment on CCWT and CTP by Levamisole parenteral therapy was found to be 92%. Use of levamisole either per oral or by per cutaneous route with the modus operandi for the non-specific stimulation of immune system was also found effective for treating bovine cutaneous papillomatosis. Papillomas regressed completely or sloughed up from the site of cutaneous attachment in the majority of cattle undergoing administered levamisole therapy (Figure-71, E & F). Levamisole was also reported to enhance immune response to viral antigens.

5.6 Ivermectin therapy

5.6.1 Ivermectin oral therapy

Effect of Ivermectin oral therapy on cutaneous papillomatosis was studied on thirty clinical cases of BP, based on visual assessment of the lesions and result has been presented in table (Table-142& 143). No clinical alteration was noted in twenty four cases (n = 24/30) and clinical alteration or partial regression started in six cases (n = 6/30) at DPT-15. At DPT-45, complete clinical cure was noted in one case and marked reduction in size or regression of lesions occurred in eighteen cases and no clinical alteration was noticed in nine cases. Maximum clinical cure was noted at DPT-90, where complete recovery was noted in eleven cases, partial to moderate regression or cure was noted in eight cases and no clinical cure was noted in six cases.
### Table-142: Ivermectin oral therapy for treating bovine cutaneous papillomatosis: a clinical trial on thirty (n = 30) animals

<table>
<thead>
<tr>
<th>Sl No</th>
<th>Animal I/D</th>
<th>Animal details (Breed, age, sex)</th>
<th>Distribution of wart/site/location</th>
<th>No of warts</th>
<th>Size</th>
<th>Clinical recovery status</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>DPT-15</td>
</tr>
<tr>
<td>1</td>
<td>BDN-07</td>
<td>CBJ HF, 2.5 Years</td>
<td>Round and dome shaped warts on head, neck and fore limbs</td>
<td>n = 60</td>
<td>1-3 cm</td>
<td>No clinical alteration and no fresh wart appeared (0)</td>
</tr>
<tr>
<td>2</td>
<td>BDN-10</td>
<td>ND MC, 10 Months</td>
<td>Round and dome shaped warts on peri orbital region</td>
<td>n = 12</td>
<td>1-2 cm</td>
<td>Regression of warts started (1)</td>
</tr>
<tr>
<td>3</td>
<td>BDN-54</td>
<td>Gir Heifer 3 Years</td>
<td>Hard, spiny, pedunculated wart on posterior lumbar and hind limbs</td>
<td>n = 25</td>
<td>3-4 cm</td>
<td>No clinical alteration and no fresh wart appeared (0)</td>
</tr>
<tr>
<td>4</td>
<td>BKY-15</td>
<td>CBJ HF, 2 Years</td>
<td>Small cauliflower like warts on head and around the eyes</td>
<td>n = 21</td>
<td>2-2.5 cm</td>
<td>Shrinkage of warts and hardening observed (1)</td>
</tr>
<tr>
<td>5</td>
<td>BKY-25</td>
<td>CBJ HF, 2 Years</td>
<td>Numerous cauliflower like warts on limbs and back</td>
<td>n = 60</td>
<td>2-3.5 cm</td>
<td>No clinical alteration (0)</td>
</tr>
<tr>
<td>6</td>
<td>BKY-26</td>
<td>CBJ HF, 2 Years</td>
<td>Cauliflower like warts solely on the neck region(bilateral)</td>
<td>n = 35</td>
<td>2-3 cm</td>
<td>Gradual reduction in size noted (1)</td>
</tr>
<tr>
<td>7</td>
<td>BKY-27</td>
<td>ND MC, 1 Year</td>
<td>Flat and round warts on cheeks,</td>
<td>n = 6</td>
<td>1-2 cm</td>
<td>No clinical alteration (0)</td>
</tr>
<tr>
<td>8</td>
<td>BKY-32</td>
<td>ND MC, 1 Year</td>
<td>Flat and round non pedunculated warts on cheeks and ears</td>
<td>n = 9</td>
<td>1-3 cm</td>
<td>No clinical alteration (0)</td>
</tr>
<tr>
<td>9</td>
<td>BKY-33</td>
<td>CBJ HF, 2 Years</td>
<td>Squat type warts on fore limbs, back and abdomen</td>
<td>n = 55</td>
<td>2-3 cm</td>
<td>Stable/ no clinical alteration noted (0)</td>
</tr>
<tr>
<td>10</td>
<td>BKY-34</td>
<td>ND MC, 1 Year</td>
<td>Hard, horny, cauliflower like warts on ears</td>
<td>n = 6</td>
<td>1-2 cm</td>
<td>Lesions shrinked and hardened (1)</td>
</tr>
<tr>
<td>Case</td>
<td>Description</td>
<td>Treatment</td>
<td>Lesion Changes</td>
<td>Wart Changes</td>
<td>Complete Clinical Cure</td>
<td>Recurrence or Neo-Formation</td>
</tr>
<tr>
<td>------</td>
<td>-------------</td>
<td>-----------</td>
<td>----------------</td>
<td>--------------</td>
<td>-----------------------</td>
<td>---------------------------</td>
</tr>
<tr>
<td>11 BKU-38</td>
<td>ND MC, 10 Months</td>
<td>Small, nodular, non pedunculated warts on back</td>
<td>Growths inhibited(1)</td>
<td>Lesions shrunk(1)</td>
<td>Most of the warts dried and dropped(1)</td>
<td>No recurrence or no neo-formation(2)</td>
</tr>
<tr>
<td>12 BKU-40</td>
<td>Gir MC, 10 Months</td>
<td>Small, nodular, pedunculated warts on back and axilla</td>
<td>Prevented new development of lesions(1)</td>
<td>Growths inhibited(1)</td>
<td>Gradual reduction in size noted(1)</td>
<td>Regression of warts and sloughing started (1)</td>
</tr>
<tr>
<td>13 BKU-43</td>
<td>ND MC, 10 Months</td>
<td>Small cauliflower like warts on back, belly and axilla</td>
<td>No appreciable change(0)</td>
<td>No fresh lesion appeared(0)</td>
<td>Growths inhibited(1)</td>
<td>Sloughing of few warts and cutaneous sores observed (1)</td>
</tr>
<tr>
<td>14 BKU-44</td>
<td>CBJ Cow, 3 Years</td>
<td>Sessile type warts on neck</td>
<td>No appreciable change(0)</td>
<td>No appreciable change(0)</td>
<td>No fresh lesion appeared(0)</td>
<td>Growths inhibited(1)</td>
</tr>
<tr>
<td>15 BKU-51</td>
<td>CBJ HF, 3.5 Years</td>
<td>Pedunculated para-genital warts</td>
<td>No alteration</td>
<td>Little reduction in size (0)</td>
<td>Growths inhibited and shrunk (1)</td>
<td>Small warts sloughed off (1)</td>
</tr>
<tr>
<td>16 BKU-53</td>
<td>Indigenous cow, 4 Years</td>
<td>Tag type warts on right neck</td>
<td>No appreciable change(0)</td>
<td>No appreciable change(0)</td>
<td>No fresh lesion appeared(0)</td>
<td>Little reduction in size (0)</td>
</tr>
<tr>
<td>17 BKU-55</td>
<td>ND HF, 2 Years</td>
<td>Conical warts on face, neck and thorax</td>
<td>No appreciable change(0)</td>
<td>No appreciable change(0)</td>
<td>No fresh lesion appeared(0)</td>
<td>Growths inhibited(1)</td>
</tr>
<tr>
<td>18 BKU-65</td>
<td>ND HF, 2 Years</td>
<td>Conical warts on head, face, neck and thorax</td>
<td>No appreciable change(0)</td>
<td>No appreciable change(0)</td>
<td>No fresh lesion appeared(0)</td>
<td>Growths inhibited(1)</td>
</tr>
<tr>
<td>19 NDA-07</td>
<td>ND FC, 8 Months</td>
<td>Hard, horny, pedunculated warts on rump slope, chest and wither</td>
<td>No alteration</td>
<td>Little reduction in size (0)</td>
<td>Growths inhibited and shrunk (1)</td>
<td>Small warts sloughed off (1)</td>
</tr>
<tr>
<td>20 NDA-09</td>
<td>ND MC, 16 Months</td>
<td>Dome shaped warts on ears, around the eyes and back</td>
<td>No appreciable change(0)</td>
<td>No appreciable change(0)</td>
<td>No fresh lesion appeared(0)</td>
<td>Little reduction in size (0)</td>
</tr>
<tr>
<td>21 NDA-15</td>
<td>ND HF, 2.5 Years</td>
<td>Cauliflower like warts on head, neck, face and fore limbs</td>
<td>No alteration</td>
<td>Little reduction in size (0)</td>
<td>Growths inhibited and shrunk (1)</td>
<td>Small warts sloughed off (1)</td>
</tr>
<tr>
<td>22 NDA-17</td>
<td>ND HF, 1.5 Years</td>
<td>Sessile type warts on head, below the eyes and on shoulder</td>
<td>No appreciable change(0)</td>
<td>No appreciable change(0)</td>
<td>No fresh lesion appeared(0)</td>
<td>Little reduction in size (0)</td>
</tr>
<tr>
<td>Case</td>
<td>ID</td>
<td>Species</td>
<td>Description</td>
<td>Count</td>
<td>Initial Size</td>
<td>Changes</td>
</tr>
<tr>
<td>------</td>
<td>------</td>
<td>---------</td>
<td>-----------------------------------------------------------------------------</td>
<td>-------</td>
<td>--------------</td>
<td>----------------------------------------------</td>
</tr>
<tr>
<td>23</td>
<td>NDA-28</td>
<td>CBJ HF, 2.5 Years</td>
<td>Cocks comb like warts on axilla</td>
<td>20</td>
<td>4-6 cm</td>
<td>Little reduction in size</td>
</tr>
<tr>
<td>24</td>
<td>NDA-30</td>
<td>ND HF, 2.5 Years</td>
<td>Lentil shaped wart on neck</td>
<td>1</td>
<td>9 cm</td>
<td>No appreciable change</td>
</tr>
<tr>
<td>25-31</td>
<td>NDA-31</td>
<td>ND HF, 3.5 Years</td>
<td>Luxurient warty growth on eyelids, fore head, meatus auditorius and axilla</td>
<td>24</td>
<td>4-6 cm</td>
<td>Little reduction in size</td>
</tr>
<tr>
<td>25</td>
<td>NDA-32</td>
<td>CBJ HF, 2 Years</td>
<td>Hard, horny conical warts on face, neck and shoulder</td>
<td>12</td>
<td>3-5 cm</td>
<td>Little reduction in size</td>
</tr>
<tr>
<td>27-33</td>
<td>NDA-33</td>
<td>ND HF, 3 Years</td>
<td>Small frond type papilloma on all four teats</td>
<td>6</td>
<td>1-3 cm</td>
<td>Little reduction in size</td>
</tr>
<tr>
<td>28-34</td>
<td>NDA-34</td>
<td>CBJ Cow, 3 Years</td>
<td>Generalized wart</td>
<td>56</td>
<td>3-7 cm</td>
<td>Little reduction in size</td>
</tr>
<tr>
<td>32-35</td>
<td>NDA-35</td>
<td>HLX Cow, 3 Years</td>
<td>Florid type warts on rear teats</td>
<td>4</td>
<td>6-8 cm</td>
<td>Little reduction in size</td>
</tr>
<tr>
<td>30</td>
<td>NDA-43</td>
<td>CBJ HF, 2 Years</td>
<td>Cauliflower like pedunculated warts on head region</td>
<td>7</td>
<td>3-5 cm</td>
<td>Little reduction in size</td>
</tr>
</tbody>
</table>

Results
Table-143: Effect of oral ivermectin therapy (Double shot at 15 days interval) on clinical cutaneous papillomatosis in précised form

<table>
<thead>
<tr>
<th>Response to treatment at different DPT</th>
<th>No Clinical alteration</th>
<th>Regression or Clinical alteration</th>
<th>Complete clinical cure</th>
</tr>
</thead>
<tbody>
<tr>
<td>DPT-15</td>
<td>n = 24</td>
<td>n = 06</td>
<td>n = 0</td>
</tr>
<tr>
<td>DPT-30</td>
<td>n = 22</td>
<td>n = 08</td>
<td>n = 0</td>
</tr>
<tr>
<td>DPT-45</td>
<td>n = 15</td>
<td>n = 14</td>
<td>n = 01</td>
</tr>
<tr>
<td>DPT-60</td>
<td>n = 09</td>
<td>n = 18</td>
<td>n = 02</td>
</tr>
<tr>
<td>DPT-75</td>
<td>n = 06</td>
<td>n = 19</td>
<td>n = 02</td>
</tr>
<tr>
<td>DPT-90</td>
<td>n = 06</td>
<td>n = 08</td>
<td>n = 11</td>
</tr>
</tbody>
</table>

Summary: Complete clinical cure (n = 16), 53.33%, No clinical alteration/ no clinical cure (n = 6), 20%, Partial to moderate regression n = 8, 26.66% (Response to treatment on regression of warts, n = 24, 80%)

5.6.2 Single shot subcutaneous administration of Ivermectin for treating bovine cutaneous papillomatosis: A clinical trial on thirty spontaneous cases of CCWT (n = 30)

Result has shown in table (Table-144 & 145) with clinical recovery score.Single shot Ivermectin therapy by S/C route as administered to thirty clinically affected animals resulted in 70% clinical recovery or complete regression of warts in animals.At DPT-15 in seventeen cases there was onset of regression of the lesions and no clinical alteration was noted in thirteen cases.Complete clinical cure was started at DPT-60 and percentile clinical recovery status was 33.33% and maximum recovery was noted at DPT-90 and percentile recovery status was 50%. No clinical alteration was noted in four numbers of treated cases.
Table-144: Single shot subcutaneous administration of Ivermectin for treating bovine cutaneous papillomatosis: A clinical trial on thirty spontaneous cases of CCWT (n = 30)

<table>
<thead>
<tr>
<th>SL NO</th>
<th>Animal I/D</th>
<th>Animal details (Breed, age, sex)</th>
<th>Distribution of wart/site/location</th>
<th>No of warts</th>
<th>Size</th>
<th>Distribution of wart/site/location</th>
<th>No of warts</th>
<th>Size</th>
<th>Recovery status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>STP-25</td>
<td>RS HF, 2 Years</td>
<td>Dome shaped warts on flank and tail base</td>
<td>n = 8</td>
<td>3-4 cm</td>
<td>Growth inhibition and little reduction in size</td>
<td></td>
<td></td>
<td>Warts dried up and dropping started (1)</td>
</tr>
<tr>
<td>2</td>
<td>STP-27</td>
<td>ND MC, 8 Months</td>
<td>Sessile type warts on neck and back</td>
<td>Π = 09</td>
<td>3-5 cm</td>
<td>Growth inhibition and little reduction in size</td>
<td></td>
<td></td>
<td>Shrinking of lesions (1)</td>
</tr>
<tr>
<td>3</td>
<td>STP-29</td>
<td>ND MC, 11 Months</td>
<td>Elongated rough sessile type warts on face and neck</td>
<td>Π = 08</td>
<td>2-2.5 cm</td>
<td>No clinical alteration (0)</td>
<td>No clinical alteration (0)</td>
<td>Little reduction in size (0)</td>
<td>Growthths inhibited (1)</td>
</tr>
<tr>
<td>4</td>
<td>STP-30</td>
<td>RS HF, 2 Years</td>
<td>Warts as if bunch of grapes on chest and abdomen</td>
<td>n = 12</td>
<td>4-4.5 cm</td>
<td>No clinical alteration (0)</td>
<td>No clinical alteration (0)</td>
<td>No clinical alteration (0)</td>
<td>No clinical alteration (0)</td>
</tr>
<tr>
<td>5</td>
<td>STP-38</td>
<td>ND HF, 2 Years</td>
<td>Sessile type warts on neck and inter scapular region</td>
<td>n = 34</td>
<td>3-4 cm</td>
<td>No clinical alteration (0)</td>
<td>No clinical alteration (0)</td>
<td>No clinical alteration (0)</td>
<td>No clinical alteration (0)</td>
</tr>
<tr>
<td>6</td>
<td>STP-39</td>
<td>Gir HF, 2 Years</td>
<td>Rounded, club shaped warts on head, neck and inter scapular region</td>
<td>n = 21</td>
<td>3-7 cm</td>
<td>No clinical alteration (0)</td>
<td>No clinical alteration (0)</td>
<td>No clinical alteration (0)</td>
<td>No clinical alteration (0)</td>
</tr>
<tr>
<td>7</td>
<td>STP-40</td>
<td>ND MC, 8 Months</td>
<td>Club shaped and elongated growths solely on head</td>
<td>n = 05</td>
<td>2-4 cm</td>
<td>Growth inhibited (1)</td>
<td>Growthths inhibited</td>
<td>Warts dried up and dropping started (1)</td>
<td>Complete regression (2)</td>
</tr>
<tr>
<td>8</td>
<td>STP-44</td>
<td>ND MC, 10 Months</td>
<td>Nodular warts on face, muzzle and fore limbs</td>
<td>n = 28</td>
<td>2-4 cm</td>
<td>Growth inhibition and little reduction in size (1)</td>
<td>Growthths inhibited</td>
<td>Warts dried up and dropping started (1)</td>
<td>Complete regression (2)</td>
</tr>
<tr>
<td>9</td>
<td>STP-45</td>
<td>CBJ HF, 1.5 Years</td>
<td>Lobulated and pedunculated warts on face, head, thorax and belly</td>
<td>n = 45</td>
<td>3-5 cm</td>
<td>No clinical alteration and no fresh wart appeared (0)</td>
<td>Regression of warts started (1)</td>
<td>Small old warts started dropping (1)</td>
<td>Shrinkage of warts and hardening and sloughing (1)</td>
</tr>
<tr>
<td>10</td>
<td>STP-52</td>
<td>ND BK, 3 Years</td>
<td>Small nodular warts on head</td>
<td>n = 8</td>
<td>1-1.5 cm</td>
<td>Growth inhibition and little regression</td>
<td>Drying and shrinking started (1)</td>
<td>Sloughing started (1)</td>
<td>Complete clinical cure (2)</td>
</tr>
<tr>
<td>11</td>
<td>STP-56</td>
<td>ND FC, 12 Months</td>
<td>Cauliflower like warts on neck, face and shoulder</td>
<td>n = 32</td>
<td>2-3.5 cm</td>
<td>Little reduction in size (1)</td>
<td>Drying and shrinking started (1)</td>
<td>Sloughing started (1)</td>
<td>Complete clinical cure (2)</td>
</tr>
<tr>
<td>Case</td>
<td>STP</td>
<td>Breed</td>
<td>Age</td>
<td>Location</td>
<td>Size</td>
<td>Treatment</td>
<td>Response</td>
<td>Recurrence</td>
<td>Comments</td>
</tr>
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</tr>
<tr>
<td>12</td>
<td>STP-66</td>
<td>Gir HF, 1.5 Years</td>
<td>Globoïd tumours on head, around eyes, neck and thorax</td>
<td>n = 22</td>
<td>3-4 cm</td>
<td>Growth prevented and regression started (1)</td>
<td>Drying and shrinking started (1)</td>
<td>Sloughing started (1)</td>
<td>Complete clinical cure (2)</td>
</tr>
<tr>
<td>13</td>
<td>STP-70</td>
<td>ND FC, 9 Months</td>
<td>Cauliflower like warts on neck, shoulder and back</td>
<td>n = 25</td>
<td>3-4 cm</td>
<td>Little reduction in size(1)</td>
<td>Drying and shrinking started (1)</td>
<td>Sloughing started (1)</td>
<td>Complete clinical cure (2)</td>
</tr>
<tr>
<td>14</td>
<td>STP-75</td>
<td>CBJ HF, 2.5 Years</td>
<td>Rounded and elongated solid outgrowths on poll, face, around eyes and vulva</td>
<td>n = 36</td>
<td>3-5 cm</td>
<td>Little reduction in size(1)</td>
<td>Growths inhibited and regression started (1)</td>
<td>Shrinking of lesions (1)</td>
<td>Smaller ones sloughed off(1)</td>
</tr>
<tr>
<td>15</td>
<td>STP-77</td>
<td>CBJ HF, 2.5 Years</td>
<td>Sessile type warts on head, inter-scapular region and fore limbs</td>
<td>n = 24</td>
<td>2-3.5 cm</td>
<td>Growth inhibition and little reduction in size (1)</td>
<td>Drying and shrinking started (1)</td>
<td>Sloughing started (1)</td>
<td>Complete clinical cure (2)</td>
</tr>
<tr>
<td>16</td>
<td>STP-82</td>
<td>ND FC, 10 Months</td>
<td>Sessile type warts on ear tips, around eyes and neck</td>
<td>n = 24</td>
<td>3-3.5 cm</td>
<td>Little reduction in size (1)</td>
<td>Growths inhibited</td>
<td>Shrinking of lesions (1)</td>
<td>Smaller ones sloughed off(1)</td>
</tr>
<tr>
<td>17</td>
<td>STP-89</td>
<td>RS HF, 1.5 Years</td>
<td>Active solid outgrowths on ear tips, eyes and thorax</td>
<td>n = 26</td>
<td>3-5 cm</td>
<td>Little reduction in size (1)</td>
<td>Growths inhibited</td>
<td>Shrinking of lesions (1)</td>
<td>Smaller ones sloughed off(1)</td>
</tr>
<tr>
<td>18</td>
<td>STP-90</td>
<td>CBJ MC, 11 Months</td>
<td>Round to spheroid outgrowths on head, neck and belly</td>
<td>n = 42</td>
<td>3-6 cm</td>
<td>Little reduction in size(1)</td>
<td>Drying and shrinking started (1)</td>
<td>Sloughing started (1)</td>
<td>Complete clinical cure (2)</td>
</tr>
<tr>
<td>19</td>
<td>STP-99</td>
<td>CBJ FC, 10 Months</td>
<td>Nodular warts on neck, chest and belly</td>
<td>n = 32</td>
<td>3-4 cm</td>
<td>No clinical alteration(0)</td>
<td>No clinical alteration(0)</td>
<td>Little reduction in size (0)</td>
<td>Growths inhibited(1)</td>
</tr>
<tr>
<td>20</td>
<td>STP-104</td>
<td>CBJ MC, 10 Months</td>
<td>Spheroid outgrowth on head, neck and belly</td>
<td>n = 24</td>
<td>3-6 cm</td>
<td>No clinical alteration(0)</td>
<td>No clinical alteration(0)</td>
<td>Little reduction in size (0)</td>
<td>Growths inhibited(1)</td>
</tr>
<tr>
<td>21</td>
<td>HLY-10</td>
<td>CBJ HF, 2 Years</td>
<td>Cauliflower like warts around the scrotum and inner aspect of thigh</td>
<td>n = 20</td>
<td>5-8 cm</td>
<td>No clinical alteration(0)</td>
<td>No clinical alteration(0)</td>
<td>No clinical alteration(0)</td>
<td>No clinical alteration(0)</td>
</tr>
<tr>
<td>22</td>
<td>HLY-16</td>
<td>ND BK, 5 Years</td>
<td>Irregular cauliflower like growth on the face, neck and dewlap</td>
<td>n = 14</td>
<td>3-4 cm</td>
<td>No clinical alteration(0)</td>
<td>No clinical alteration(0)</td>
<td>Little reduction in size (0)</td>
<td>Growths inhibited(1)</td>
</tr>
<tr>
<td>23</td>
<td>HLY-18</td>
<td>Gir FC, 10 Months</td>
<td>Cauliflower like pedunculated warts on hind limbs and perineum</td>
<td>n = 20</td>
<td>3-4 cm</td>
<td>No clinical alteration(0)</td>
<td>No clinical alteration(0)</td>
<td>Little reduction in size (0)</td>
<td>Growths inhibited and smaller ones sloughed up(1)</td>
</tr>
<tr>
<td>24</td>
<td>HLY-21</td>
<td>CBJ HF, 24 Months</td>
<td>Club shaped non pedunculated solid warts on neck and shoulder region</td>
<td>n = 20</td>
<td>5-8 cm</td>
<td>Little reduction in size(1)</td>
<td>Growths inhibited and regression started (1)</td>
<td>Shrinking of lesions (1)</td>
<td>Smaller ones sloughed off(1)</td>
</tr>
<tr>
<td>No</td>
<td>Patient Code</td>
<td>Breed, Age</td>
<td>Description</td>
<td>n=</td>
<td>Size</td>
<td>Clinical Change</td>
<td>Response</td>
<td>Additional Notes</td>
<td></td>
</tr>
<tr>
<td>----</td>
<td>--------------</td>
<td>------------</td>
<td>-------------</td>
<td>-----</td>
<td>------</td>
<td>----------------</td>
<td>----------</td>
<td>------------------</td>
<td></td>
</tr>
<tr>
<td>25</td>
<td>HLY-27</td>
<td>CBJ HF, 24 Months</td>
<td>Finger like warts on face and around the eyes</td>
<td>30</td>
<td>3-4 cm</td>
<td>No clinical alteration(0)</td>
<td>No clinical alteration(0)</td>
<td>Little reduction in size (0)</td>
<td>Growths inhibited (1)</td>
</tr>
<tr>
<td>26</td>
<td>HLY-43</td>
<td>Upgraded Gir HF, 2 Years</td>
<td>Club shaped warts on sacral and peri anal region</td>
<td>14</td>
<td>2-3 cm</td>
<td>No clinical alteration(0)</td>
<td>No clinical alteration(0)</td>
<td>Little reduction in size (0)</td>
<td>Growths inhibited (1)</td>
</tr>
<tr>
<td>27</td>
<td>HLY-47</td>
<td>CBJ HF, 1.5 Years</td>
<td>Small cauliflower like pedunculated growth on neck and back</td>
<td>14</td>
<td>2-3 cm</td>
<td>No clinical alteration(0)</td>
<td>No clinical alteration(0)</td>
<td>Little reduction in size (0)</td>
<td>Growths inhibited (1)</td>
</tr>
<tr>
<td>28</td>
<td>HLY-56</td>
<td>CBJ HF, 2.5 Years</td>
<td>Dome shaped growth on the ear pinna, neck and fore limbs</td>
<td>20</td>
<td>5-7 cm</td>
<td>Little reduction in size</td>
<td>Growths inhibited</td>
<td>Shrinking of lesions (1)</td>
<td>Smaller ones sloughed off(1)</td>
</tr>
<tr>
<td>29</td>
<td>HLY-77</td>
<td>CBJ HF, 2 Years</td>
<td>Club shaped warts on neck and shoulder region</td>
<td>30</td>
<td>2-3 cm</td>
<td>No clinical alteration(0)</td>
<td>No clinical alteration(0)</td>
<td>Growths inhibited and dropping started(1)</td>
<td>Smaller ones sloughed off(1)</td>
</tr>
<tr>
<td>30</td>
<td>HLY-88</td>
<td>Gir FC, 10 Months</td>
<td>Small cauliflower like pedunculated growth on hind limbs and tail</td>
<td>30</td>
<td>3-4 cm</td>
<td>No clinical alteration(0)</td>
<td>No clinical alteration(0)</td>
<td>Little reduction in size (0)</td>
<td>Growths inhibited (1)</td>
</tr>
</tbody>
</table>
Table-145: Effectiveness of single shot S/C Ivermectin therapy on BPin gist form

<table>
<thead>
<tr>
<th>Response to treatment at different DPT</th>
<th>No Clinical alteration</th>
<th>Regression or Clinical alteration</th>
<th>Complete clinical cure</th>
</tr>
</thead>
<tbody>
<tr>
<td>DPT-15</td>
<td>n = 13</td>
<td>n = 17</td>
<td>n = 0</td>
</tr>
<tr>
<td>DPT-30</td>
<td>n = 12</td>
<td>n = 18</td>
<td>n = 0</td>
</tr>
<tr>
<td>DPT-45</td>
<td>n = 12</td>
<td>n = 18</td>
<td>n = 0</td>
</tr>
<tr>
<td>DPT-60</td>
<td>n = 04</td>
<td>n = 16</td>
<td>n = 10</td>
</tr>
<tr>
<td>DPT-75</td>
<td>n = 04</td>
<td>n = 14</td>
<td>n = 02</td>
</tr>
<tr>
<td>DPT-90</td>
<td>n = 04</td>
<td>n = 05</td>
<td>n = 09</td>
</tr>
</tbody>
</table>

Recovery status-Complete clinical cure (n = 21)70%, Partial to moderate clinical cure (n = 5) 23.33%, No clinical alteration (n = 04) 6.66%; overall response to treatment (n = 26), 86.66%

5.6.3 Double shot subcutaneous administration of Ivermectin for treating cattle cutaneous papillomatosis (CCP): A clinical trial on thirty naturally infected CCP cases (n = 30)

Double shot ivermectin therapy resulted in clinical alteration and or reduction in size of the warts as early as 15 DPT in 17 cases, and complete recovery occurred at DPT-60 in 10 infected animals, and clinical alteration and or regression occurred in twenty three cases. At DPT-75 complete clinical recovery occurred again in seven animals and at DPT -90 there was complete recovery in twelve cases.Overall recovery status was 86.66%. Response to CCP cases by double shot S/C Ivermectin therapy has been presented in table (Table146&147).
**Table-146: Double shot subcutaneous administration of Ivermectin for treating cattle cutaneous papillomatosis (CCP): A clinical trial on thirty naturally infected CCP cases (n = 30)**

<table>
<thead>
<tr>
<th>SL NO</th>
<th>Animal I/D</th>
<th>Animal details (Breed, age, sex)</th>
<th>Distribution of wart/site/location</th>
<th>No of warts</th>
<th>Size</th>
<th>Recovery status on CWT and TP by double shot Ivermectin by S/C route at 15 days interval</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>DPT-15</td>
</tr>
<tr>
<td>1</td>
<td>BBM-2</td>
<td>Gir FC, 13 Months</td>
<td>Round, nodular warts on hind limbs</td>
<td>n = 20</td>
<td>2-3 cm</td>
<td>No clinical alteration (0)</td>
</tr>
<tr>
<td>2</td>
<td>BBM-6</td>
<td>Gir FC, 10 Months</td>
<td>Flat and round type non pedunculated warts on fore limbs and back</td>
<td>n = 24</td>
<td>1-2 cm</td>
<td>Growth inhibited and regression started (1)</td>
</tr>
<tr>
<td>3</td>
<td>NTP-85</td>
<td>ND BF, 4 Years</td>
<td>Frond type warts on teats and udder</td>
<td>n = 8</td>
<td>1-2 cm</td>
<td>No clinical alteration (0)</td>
</tr>
<tr>
<td>4</td>
<td>NTP-86</td>
<td>ND lactating BF, 4 Years</td>
<td>Rice grain type warts on all four teats</td>
<td>n = 9</td>
<td>1.5-2 cm</td>
<td>Little reduction in size and drying of warts (1)</td>
</tr>
<tr>
<td>5</td>
<td>NTP-87</td>
<td>CB BF HF, 3 Years</td>
<td>Frond type warts on teats and udder</td>
<td>n = 8</td>
<td>2.5-3 cm</td>
<td>No clinical alteration (0)</td>
</tr>
<tr>
<td>6</td>
<td>NTP-89</td>
<td>MB BF, 5 Years</td>
<td>Frond type warts at the base of all four teats</td>
<td>n = 6</td>
<td>0.5-2 cm</td>
<td>Little reduction in size and drying of warts (1)</td>
</tr>
<tr>
<td>7</td>
<td>NTP-92</td>
<td>MB BF, 5 Years</td>
<td>Frond type warts on fore teats around the teat orifice</td>
<td>n = 9</td>
<td>1.2 cm</td>
<td>No clinical alteration (0)</td>
</tr>
<tr>
<td>8</td>
<td>NTP-95</td>
<td>ND Lactating water buffalo -1.1 (4 years)</td>
<td>Fili form warts on hind teats</td>
<td>n = 12</td>
<td>0.5-2 cm</td>
<td>No clinical alteration (0)</td>
</tr>
<tr>
<td>9</td>
<td>NTP-12</td>
<td>CB JF, 2.5 Years</td>
<td>Round, dome shaped warts on ears and around the eyes</td>
<td>n = 12</td>
<td>2-2.5 cm</td>
<td>Little reduction in size (1)</td>
</tr>
<tr>
<td>10</td>
<td>NTP-09</td>
<td>CB JF, 1.5 Years</td>
<td>Cluster of warts on eyes and fore limbs</td>
<td>n = 70</td>
<td>2.3-5 cm</td>
<td>No clinical alteration (0)</td>
</tr>
<tr>
<td>11</td>
<td>NTP-12</td>
<td>CB JF, 12 Months</td>
<td>Irregular shaped warts at the peri-orbital area</td>
<td>n = 12</td>
<td>2.4 cm</td>
<td>Little reduction in size (1)</td>
</tr>
<tr>
<td>12</td>
<td>NTP-15</td>
<td>MB HF, 2 Years</td>
<td>Cauliflower like pedunculated warts on shoulder and barrel</td>
<td>n = 28</td>
<td>4.5 cm</td>
<td>Little reduction in size (1)</td>
</tr>
<tr>
<td>13</td>
<td>NTP-16</td>
<td>CB JF, 2 Years</td>
<td>Sessile vegetative out growths on head, neck and thorax</td>
<td>n = 20</td>
<td>4.5 cm</td>
<td>Little reduction in size (1)</td>
</tr>
<tr>
<td>14</td>
<td>NTP-19</td>
<td>HLX HF, 3</td>
<td>Cauliflower like warts on</td>
<td>n = 65</td>
<td>3.4 cm</td>
<td>No clinical alteration (0)</td>
</tr>
<tr>
<td>Years</td>
<td>Months</td>
<td>Cervical region</td>
<td>Paragenital Warts</td>
<td>Nodular Warts</td>
<td>Rice grain type warts</td>
<td>Cauliflower like warts</td>
</tr>
<tr>
<td>------------</td>
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<td>----------------------</td>
<td>------------------------</td>
</tr>
<tr>
<td>15</td>
<td>NTP-23</td>
<td>CBJ Cow, 5 Years</td>
<td></td>
<td></td>
<td>Rice grain type warts on all four teats</td>
<td>CBJ Cow, 5 Years</td>
</tr>
<tr>
<td>16</td>
<td>NTP-56</td>
<td>CBJ FC, 12 Months</td>
<td>Cauliflower like warts on left side of the neck, dewlap and shoulder</td>
<td></td>
<td>Cauliflower like warts on left side of the neck, dewlap and shoulder</td>
<td>n = 18</td>
</tr>
<tr>
<td>17</td>
<td>PRL-21</td>
<td>RS HF, 16 Months</td>
<td>Cauliflower like warts on hind limbs and perium</td>
<td></td>
<td>Cauliflower like warts on hind limbs and perium</td>
<td>n = 20</td>
</tr>
<tr>
<td>18</td>
<td>PRL-23</td>
<td>Gir HF, 3 Years</td>
<td>Dome shaped warts on ventral iliac, stifles and flank</td>
<td></td>
<td>Dome shaped warts on ventral iliac, stifles and flank</td>
<td>n = 15</td>
</tr>
<tr>
<td>19</td>
<td>MSD-4</td>
<td>ND HF, 2 Years</td>
<td>Cauliflower like masses at the inguinal region, left thigh and tail base</td>
<td></td>
<td>Cauliflower like masses at the inguinal region, left thigh and tail base</td>
<td>n =15</td>
</tr>
<tr>
<td>20</td>
<td>MSD-5</td>
<td>CBJ MC, 12 Months</td>
<td>Cauliflower like masses at peri aural and peri-orbital region</td>
<td></td>
<td>Cauliflower like masses at peri aural and peri-orbital region</td>
<td>n =20</td>
</tr>
<tr>
<td>21</td>
<td>MSD-12</td>
<td>CBJ FC, 8 Months</td>
<td>Sessile type warts on ear tips</td>
<td></td>
<td>Sessile type warts on ear tips</td>
<td>n = 8</td>
</tr>
<tr>
<td>22</td>
<td>MSD-14</td>
<td>MB BF, 4 Years</td>
<td>Paragenital warts</td>
<td></td>
<td>Paragenital warts</td>
<td>n = 5</td>
</tr>
<tr>
<td>23</td>
<td>MSD-15</td>
<td>CBJ MC, 10 Months</td>
<td>Cauliflower like masses on neck and dewlap</td>
<td></td>
<td>Cauliflower like masses on neck and dewlap</td>
<td>n = 8</td>
</tr>
<tr>
<td>24</td>
<td>EMP-2</td>
<td>NDBK, 3 Years</td>
<td>Squat type warts on thoracic and cervical region</td>
<td></td>
<td>Squat type warts on thoracic and cervical region</td>
<td>n =15</td>
</tr>
<tr>
<td>25</td>
<td>EMP-5</td>
<td>CBJ HF, 2.5 Years</td>
<td>Small nodular warts on left thigh and axilla</td>
<td></td>
<td>Small nodular warts on left thigh and axilla</td>
<td>n = 9</td>
</tr>
<tr>
<td>26</td>
<td>EMP-9</td>
<td>ND BK, 4 Years</td>
<td>Nodular, non pendunculated warts on neck, belly and back</td>
<td></td>
<td>Nodular, non pendunculated warts on neck, belly and back</td>
<td>n = 8</td>
</tr>
<tr>
<td>27</td>
<td>EMP-12</td>
<td>ND HF, 2 Years</td>
<td>Nodular pendunculated warts on inner side of left fore leg</td>
<td></td>
<td>Nodular pendunculated warts on inner side of left fore leg</td>
<td>n = 14</td>
</tr>
<tr>
<td>28</td>
<td>EMP-14</td>
<td>ND HF, 2.5 Years</td>
<td>Flat type non pendunculated warts on hind limbs and flank</td>
<td></td>
<td>Flat type non pendunculated warts on hind limbs and flank</td>
<td>n = 16</td>
</tr>
<tr>
<td>29</td>
<td>EMP-23</td>
<td>CBJ HF, 2.5 Years</td>
<td>Flat type non pendunculated warts on head, neck and thorax</td>
<td></td>
<td>Flat type non pendunculated warts on head, neck and thorax</td>
<td>n = 8</td>
</tr>
<tr>
<td>30</td>
<td>EMP-27</td>
<td>CBJ FC, 12 Months</td>
<td>Cauliflower like warts on fore limbs</td>
<td></td>
<td>Cauliflower like warts on fore limbs</td>
<td>n = 27</td>
</tr>
</tbody>
</table>

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Table-147: Effectiveness of double shot S/C Ivermectin therapy on BP in gist form

<table>
<thead>
<tr>
<th>Response to treatment at different DPT</th>
<th>No Clinical alteration</th>
<th>Regression or Clinical alteration</th>
<th>Complete clinical cure</th>
</tr>
</thead>
<tbody>
<tr>
<td>DPT-15</td>
<td>n = 13</td>
<td>n = 17</td>
<td>n = 0</td>
</tr>
<tr>
<td>DPT-30</td>
<td>n = 09</td>
<td>n = 21</td>
<td>n = 0</td>
</tr>
<tr>
<td>DPT-45</td>
<td>n = 09</td>
<td>n = 21</td>
<td>n = 0</td>
</tr>
<tr>
<td>DPT-60</td>
<td>n = 0</td>
<td>n = 23</td>
<td>n = 07</td>
</tr>
<tr>
<td>DPT-75</td>
<td>n = 0</td>
<td>n = 16</td>
<td>n = 07</td>
</tr>
<tr>
<td>DPT-90</td>
<td>n = 0</td>
<td>n = 04</td>
<td>n = 12</td>
</tr>
</tbody>
</table>

Recovery status with double shot Ivermectin S/C therapy: Complete clinical cure-(n = 26) 86.66%, Partial to moderate clinical cure (n = 4) 13.33%, No clinical alteration-0%

Treatment by Ivermectin as either single or double dose subcutaneous applications was effective as a treatment option for bovine cutaneous papillomatosis and as compared to oral formulation of Ivermectin, injectable formulation was found as better remedial option of cutaneous papillomatosis. In the present study, the high rate of improvement obtained upon the application of single and double injections of ivermectin for the treatment of cutaneous papillomatosis might have occurred due to immunostimulatory effect of ivermectin. The process of lesion regression began with the therapy instituted after first injection and could be visually appreciated by the desiccation, shrinking, diminution of size and change of colouration. An intense process of lesion regression began, developing into the detachment of the papillomas, confirmed histologically by moderate kariolisis, progressive degeneration of the verrucous tissue and formation of the epithelial tissue close to normality.

5.7 Therapeutic trial with Injectable formulation of Antimony compound

5.7.1 Effect of Injection Antimony thiomalate (Inj Anthiomalime) on CTP

For the therapeutic purposes, the animals were treated with lithium antimony thiomalate (Injection Anthiomaline) @ 10-15ml deep I/M (five injections on alternate days, i.e. at 1, 3, 5, 7 and 9th days) depending on the body weight of the animals as stated in materials and methods section. It was observed that out of 10 treated cases of CTP in six cows (60% cases) most of the warts on udder and teats shrinked or regressed, dried up and dropped away at DPT 28. A follow up treatment was resorted again after four weeks in all four cows those still bearing the intact wart crops (typical flat elevated warts) and large frond type warts. Three cows did not respond to anthiomalne therapy during six months follow up period. Rest seven cows made uneventful recovery leaving no scar mark in situ, either on teats or on udder skin with in 4 to 8 weeks and no recurrence was reported till next six months. The nonresponding cases were the cows bearing typical wide base, flat, elevated warts and large frond type warts on teats and udder (in one case).
5.7.1.2 Studies on anthiomaline therapy alone on bovine and bubaline cutaneous papillomatosis

Regression started as early as DPT-15 in 11 numbers and no clinical alteration was noted in thirty four cases. Complete disappearance of lesions occurred in eleven cases at DPT-30 with partial regression in seventeen and no regression seen in rest seventeen cases. At DPT-45 there was maximum number of clinical recovery that occurred in seventeen cases and shedding started in seven and no clinical alteration occurred in ten cases. At DPT -60 there was three complete recovery and almost clinical cure in four cases. Overall complete clinical cure was seen in 35 cases out of treated 45 cases giving 77.77% recovery rate and no alteration and or regression occurred in 10 cases out of 45 treated cases giving 22.22% non effectiveness of the therapy concern. Result has been presented in table (Table-148).
Table -148: Studies on anthiomaline therapy alone on bovine and bubaline cutaneous papillomatosis (n = 45)

<table>
<thead>
<tr>
<th>Sl No</th>
<th>Animal ID</th>
<th>Animal Details</th>
<th>Gross clinical observation with size and number of warts with anatomical location</th>
<th>Clinical recovery status/response to Anthiomaline therapy</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(DPT-15) (DPT-30) (DPT-45) (DPT-60) (DPT-75)</td>
</tr>
<tr>
<td>1</td>
<td>STP-116(RKM-8)</td>
<td>Cross bred heifer(JYXGir-043), 2 years</td>
<td>Cauliflower like warts on ears, face and muzzle, n = 5, 1-3 cm</td>
<td>No alteration Regression started Complete regression No recurrence No recurrence</td>
</tr>
<tr>
<td>2</td>
<td>NDA-181(SLF-35)</td>
<td>Cross bred heifer(X-597), 2 years</td>
<td>Sessile type warts on ear flaps, face and neck, n = 10, 2-4 cm</td>
<td>No alteration Stable and no neo-formation Stable and no neo-formation No regression No regression</td>
</tr>
<tr>
<td>3</td>
<td>NDA-182(SLF-36)</td>
<td>Cross bred heifer (3 X HJ-5), 2 years</td>
<td>Cauliflower like warts on fore limbs, n = 5, 1-3 cm</td>
<td>Stable and no neo-formation Regression started Complete regression No recurrence No recurrence</td>
</tr>
<tr>
<td>4</td>
<td>NDA-241(PBGSBS-11)</td>
<td>Indigenous heifer(Sahiwal) S-303, 3 years</td>
<td>Stalked warts on ear pinna and ear base, n = 16,2-3cm</td>
<td>Stable and no neo-formation Stable and no neo-formation Regression started Complete regression No recurrence</td>
</tr>
<tr>
<td>5</td>
<td>NDA-242(PBGSBS-12)</td>
<td>Indigenous heifer(Gir) G-423, 3 years</td>
<td>Squat type warts on ears and posterior aspect of the thigh, n = 21, 2-2.5 cm</td>
<td>No alteration Regression started Complete regression No recurrence No recurrence</td>
</tr>
<tr>
<td>6</td>
<td>NDA-189(SLF-43)</td>
<td>Cross bred heifer(4 X FJ-649), 2 years</td>
<td>Stalked warts head, neck and back, n = 16,2-5 cm</td>
<td>No alteration Regression started Complete regression No recurrence No recurrence</td>
</tr>
<tr>
<td>7</td>
<td>NDA-193 (SLF-43)</td>
<td>Murrah buffalo FC (DB-515), 10 months</td>
<td>Multiple nodular warts on head, neck and forelimbs, n=10, 2-3 cm</td>
<td>Stable and no neo-formation Regression started Complete regression No recurrence No recurrence</td>
</tr>
<tr>
<td>8</td>
<td>NDA-220 (SLF-75)</td>
<td>Cross bred heifer (2 X BH-712), 3 years</td>
<td>Hard, horny cauli flower like warts on fore limbs and inter scapular region, n = 15,2-5 cm</td>
<td>No alteration Stable and no neo-formation Regression started Complete regression Or clinical cure No recurrence</td>
</tr>
<tr>
<td>9</td>
<td>NDA-207(SLF-61)</td>
<td>Murrahmilch buffalo (DB-3231), 4 years</td>
<td>Frond type warts on udder and teats, n = 7, 1-2 cm</td>
<td>Stable and no neo-formation Regression started Complete regression Or clinical cure No recurrence No recurrence</td>
</tr>
<tr>
<td>10</td>
<td>NDA-213 (SLF-67)</td>
<td>Cross bred male calf (2X HJ-12), 12 Months</td>
<td>Multiple pedunculated warts on ear, head, neck and front back, n = 12, 2-5 cm</td>
<td>No alteration Stable and no neo-formation Regression started Complete regression Or clinical cure No recurrence</td>
</tr>
<tr>
<td>11</td>
<td>NDA-258 (GDHF-4)</td>
<td>Cross bred heifer (DJF3-6736), 2 Years</td>
<td>Whole body papillomatosis, n=100, 0.5-4 cm</td>
<td>No alteration Stable and no neo-formation Regression and shedding started Shedding hastened Complete regression and or clinical cure</td>
</tr>
<tr>
<td>12</td>
<td>NDA-298 (CPS-21)</td>
<td>HLX Heifer(WB0909B00765), 1.5 Years</td>
<td>Nodular warts on back and hind legs, n=21, 1-4 cm</td>
<td>No alteration Stable Regression and shedding started Shedding hastened Complete regression Or clinical cure</td>
</tr>
<tr>
<td>13</td>
<td>HWH-34(CPS-31)</td>
<td>Cross indigenous MC (WB0909C 0023), 12 Months</td>
<td>Small cauliflower like warts eye lid and back, n=13, 1-3 cm</td>
<td>Stable and no neo-formation Regression started Complete regression Or clinical cure No recurrence No recurrence</td>
</tr>
<tr>
<td>No.</td>
<td>Code</td>
<td>Breed/Type (Genotype, Age)</td>
<td>Location and Type</td>
<td>No. of Cases</td>
</tr>
<tr>
<td>-----</td>
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<td>----------------------------------------</td>
<td>---------------------------------------------</td>
<td>--------------</td>
</tr>
<tr>
<td>14</td>
<td>HWH-39(CPS-35)</td>
<td>Cross bred heifer(WB0909C0096), 2 years</td>
<td>Whole body papillomatosis, n = 78, 1-5 cm</td>
<td>No alteration</td>
</tr>
<tr>
<td>15</td>
<td>HWH-44(CPS-42)</td>
<td>Cross bred heifer (WB0909C00765), 2 years</td>
<td>Whole body papillomatosis, n = 87, 2-5 cm</td>
<td>No alteration</td>
</tr>
<tr>
<td>16</td>
<td>KKT-24(CPS-47)</td>
<td>HLX Heifer (WB0909A0061), 3 years</td>
<td>Squat type warts on nose and around the eyes, n = 24, 1-3 cm</td>
<td>Stable and no neo-formation</td>
</tr>
<tr>
<td>17</td>
<td>KKT-31(CPS-57)</td>
<td>HLX MC (WB0909B00577), 7 months</td>
<td>Small cauliflower like warts tail and perineum, n = 5, 1-2 cm</td>
<td>Stable and no neo-formation</td>
</tr>
<tr>
<td>18</td>
<td>NDA-313(ERS-11)</td>
<td>Cross indigenous heifer (JTHF/ERSK-782), 3 Years</td>
<td>Scattered dome shaped growths on ear pinna and upper eye lids, n = 14, 2-3 cm</td>
<td>Regression started</td>
</tr>
<tr>
<td>19</td>
<td>STP-5</td>
<td>CBJ HF, 2.5 Years</td>
<td>Nodular warts around the eyes, n = 6, 1.5-3 cm</td>
<td>Regression started</td>
</tr>
<tr>
<td>20</td>
<td>STP-10</td>
<td>ND HF, 2 Years</td>
<td>Flat and round warts on fore limbs and back, n = 20, 2-2.5 cm</td>
<td>Stable and no neo-formation</td>
</tr>
<tr>
<td>21</td>
<td>STP-12</td>
<td>ND MC, 7 Months</td>
<td>Dome shaped warts, n = 18, 2-2.5 cm</td>
<td>No alteration</td>
</tr>
<tr>
<td>22</td>
<td>STP-13</td>
<td>CBJ HF, 2 Years</td>
<td>Cauliflower like warts on ears and eyes, n = 12, 3-3.5 cm</td>
<td>No alteration</td>
</tr>
<tr>
<td>23</td>
<td>STP-14</td>
<td>ND MC, 12 Months</td>
<td>Dome shaped warts on neck and fore limbs, n = 21, 2.5-3 cm</td>
<td>No alteration</td>
</tr>
<tr>
<td>24</td>
<td>STP-21</td>
<td>Gir HF, 2 Years</td>
<td>Dome shaped warts on rimaoris and neck, n = 23, 1.5-2.0 cm</td>
<td>No alteration</td>
</tr>
<tr>
<td>25</td>
<td>STP-60</td>
<td>CBJ HF, 2.5 Years</td>
<td>Hard, horny warts on medial side of left thigh and peri anal region, n=24, 2-3.5 cm</td>
<td>No alteration</td>
</tr>
<tr>
<td>26</td>
<td>STP-62</td>
<td>Gir HF, 2.5 Years</td>
<td>Globoid tumors on head, face, neck and thorax, n=28, 2-5 cm</td>
<td>No alteration</td>
</tr>
<tr>
<td>27</td>
<td>STP-63</td>
<td>ND FC, 9 Months</td>
<td>Circular, sessile type warts on head, neck, around eyes and thorax, n=30, 1.5-3.5 cm</td>
<td>No alteration</td>
</tr>
<tr>
<td>28</td>
<td>STP-66</td>
<td>Gir HF, 1.5 Years</td>
<td>Pedunculated warts on head, neck and thorax, n=32, 2.3-5 cm</td>
<td>No alteration</td>
</tr>
<tr>
<td>29</td>
<td>STP-67</td>
<td>CBJ HF, 2.6 Years</td>
<td>Circular, rough, horny warts on neck, abdomen and hind limbs, n=24, 2-3 cm</td>
<td>Stable and no neo-formation</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>30</td>
<td>STP-68</td>
<td>CBJ HF, 2.0 Years</td>
<td>Extensive lesions on face, neck and fore limbs, n=32, 2-3.5 cm</td>
<td>Stable and no neo-formation</td>
</tr>
<tr>
<td>31</td>
<td>STP-70</td>
<td>Gir HF, 1.5 Years</td>
<td>Stalked warts on udder, abdomen and external genitals, n=32, 2-3.5 cm</td>
<td>Stable and no neo-formation</td>
</tr>
<tr>
<td>32</td>
<td>STP-71</td>
<td>CBJ HF, 2.5 Years</td>
<td>Multiple, globoid tumours on head, fore limbs and inter scapular region, n=32, 3-4 cm</td>
<td>Stable and no neo-formation</td>
</tr>
<tr>
<td>33</td>
<td>STP-72</td>
<td>ND FC, 9 Months</td>
<td>Globoid tumours around eyes, ear tips and neck, n=32, 3-4 cm</td>
<td>No alteration</td>
</tr>
<tr>
<td>34</td>
<td>STP-80</td>
<td>Gir HF, 2.5 Years</td>
<td>Multiple pedunculated warts on neck, hind limbs and belly, n=08, 2-3.5 cm</td>
<td>Regression started</td>
</tr>
<tr>
<td>35</td>
<td>STP-83</td>
<td>Gir HF, 3.5 Years</td>
<td>Small nodular lesions on head, n=4, 1-1.5 cm</td>
<td>Regression started</td>
</tr>
<tr>
<td>36</td>
<td>STP-90</td>
<td>CBJ FC, 10 Months</td>
<td>Multiple pedunculated warts on head, neck and belly, n=18, 4-5 cm</td>
<td>Regression started</td>
</tr>
<tr>
<td>37</td>
<td>STP-91</td>
<td>CBJ MC, 10 Months</td>
<td>Solid, stalked outgrowth on head, inter scapular region and fore limbs, n=25, 3-5 cm</td>
<td>Regression started</td>
</tr>
<tr>
<td>38</td>
<td>STP-96</td>
<td>ND Bull, 4 Years</td>
<td>Small nodular lesions on neck, n=7, 1-1.5 cm</td>
<td>Regression started</td>
</tr>
<tr>
<td>39</td>
<td>JPG-5</td>
<td>CBJ HF, 2.6 Years</td>
<td>Sessile type warts on neck, chest and belly, n=24, 3-4 cm</td>
<td>No alteration</td>
</tr>
<tr>
<td>40</td>
<td>JPG-9</td>
<td>ND Cow, 4 Years</td>
<td>Round and dome shaped warts on all four teats, n=12, 2-3 cm</td>
<td>Regression started</td>
</tr>
<tr>
<td>41</td>
<td>JPG-14</td>
<td>HLX HF, 3 Years</td>
<td>Small cauliflower like warts on peri orbital region, n=12, 2-3 cm</td>
<td>Regression started</td>
</tr>
<tr>
<td>42</td>
<td>MSD-6</td>
<td>HLX FC, 11 Months</td>
<td>Nodular warts on hind limbs and perineum, n=15, 8-10 cm</td>
<td>No alteration</td>
</tr>
<tr>
<td>43</td>
<td>MSD-9</td>
<td>Sahiwal HF, 2 Years</td>
<td>Rice grain like warts on front two teats, n=5, 2-6 cm</td>
<td>Regression started</td>
</tr>
<tr>
<td>44</td>
<td>MSD-10</td>
<td>ND HF, 3 Years</td>
<td>Pedunculated warts on ventral aspect of the neck, below lower eyelid and face, n=12, 2-4 cm</td>
<td>Regression started</td>
</tr>
<tr>
<td>45</td>
<td>MSD-13</td>
<td>CBJ BK, 3 Years</td>
<td>Lobulated warts on thorax and back, n=55, 2-6 cm</td>
<td>No alteration</td>
</tr>
</tbody>
</table>
5.7.1.3 Result of clinical trial with combined Anthiomaline and single dose oral Ivermectin therapy

Single dose oral ivermectin in conjunction with parenteral Anthiomaline resulted in bringing clinical recovery in 31 cases and partial regression in eight cases at DPT-30. Of course regression started as early as at DPT-15 and seen in thirty four cases. At DPT-45 there were 50% warts shedding in three cases and regression started in eight cases. At DPT-60 there were 75-80% warts shedding in four cases and complete cure in one case and no clinical alteration in three cases. At DPT-75 there was one more complete cure and 75-80% shedding of warts in three and no clinical alteration in three cases. Overall response to such combined drug therapy gave 82.22% complete recovery and no effect in 6.66% cases. The result in detail has been given in table (Table-149).
Table-149: Result of clinical trial with Combined Anthiomaline and single dose oral Ivermectin therapy (n = 45)

<table>
<thead>
<tr>
<th>SL NO</th>
<th>Animal ID</th>
<th>Animal Details</th>
<th>Gross clinical observation with size and number of warts with anatomical location</th>
<th>Clinical recovery status/response to Anthiomaline therapy</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>DPT-15</td>
</tr>
<tr>
<td>1</td>
<td>MSD-23</td>
<td>CBJ Cow, 5 Years</td>
<td>Frond type warts on udder and teats, n = 12, 2-3 cm</td>
<td>Regression started</td>
</tr>
<tr>
<td>2</td>
<td>MSD-24</td>
<td>CBJ Cow, 4 Years</td>
<td>Fili form warts on all four teats, n = 12, 2-3 cm</td>
<td>No alteration and neo-formation</td>
</tr>
<tr>
<td>3</td>
<td>MDH-9</td>
<td>MBF (she buffalo)</td>
<td>Cauliflower like warts on face, eyes and ear pinna, n = 15, 2-3 cm</td>
<td>Regression started</td>
</tr>
<tr>
<td>4</td>
<td>MDH-15</td>
<td>CBJ BK, 4 Years</td>
<td>Pedunculated warts on chest and barrel, n = 12, 1-3 cm</td>
<td>Regression started</td>
</tr>
<tr>
<td>5</td>
<td>MDH-19</td>
<td>CBJ Cow, 3 Years</td>
<td>Squat type warts on neck and shoulder, n=12, 2-3 cm</td>
<td>Regression started</td>
</tr>
<tr>
<td>6</td>
<td>MDH-22</td>
<td>CBJ BK, 3 Years</td>
<td>Club shaped warts on hind limbs and anal periphery, n = 25, 2-4 cm</td>
<td>No alteration and neo-formation</td>
</tr>
<tr>
<td>7</td>
<td>MDH-30</td>
<td>CBJ Cow, 5 Years</td>
<td>Small, nodular warts on teats and udder, n=20, 2-3 cm</td>
<td>Regression started</td>
</tr>
<tr>
<td>8</td>
<td>MDH-35</td>
<td>CBJ HF, 3 Years</td>
<td>Small, cauliflower like warts on peri-genital region, n=15, 2-3 cm</td>
<td>No clinical alteration</td>
</tr>
<tr>
<td>9</td>
<td>MDH-41</td>
<td>CBJ HF, 3 Years</td>
<td>Rice grain like warts on all four teats, n=8, 1-2 cm</td>
<td>Regression started</td>
</tr>
<tr>
<td>10</td>
<td>EMP-15</td>
<td>ND HF, 2.5 Years</td>
<td>Flat type warts on hind limbs and flank, n=16, 2-4 cm</td>
<td>Regression started</td>
</tr>
<tr>
<td>11</td>
<td>EMP-16</td>
<td>ND MC, 10 Months</td>
<td>Flat type warts on fore limbs and chest region, n=16, 2-3 cm</td>
<td>Regression started</td>
</tr>
<tr>
<td>12</td>
<td>EMP-19</td>
<td>CBJ FC, 12 Months</td>
<td>Squat type warts on neck and right upper eye lid, n=27, 1-1.5 cm</td>
<td>Regression started</td>
</tr>
<tr>
<td>13</td>
<td>EMP-21</td>
<td>CBJ MC, 11 Months</td>
<td>Squat type warts on Fore limbs, n=12, 3-4.5 cm</td>
<td>Stable and no neo-formation</td>
</tr>
<tr>
<td>14</td>
<td>EMP-26</td>
<td>CBJ HF, 1.5 Year</td>
<td>Cauliflower like warts, whole body affection, n=68, 4-5 cm</td>
<td>No clinical alteration</td>
</tr>
<tr>
<td>15</td>
<td>EMP-28</td>
<td>CBJ FC, 12 Months</td>
<td>Flat type warts on lower legs below carpus and hock, n=7, 2-2.5 cm</td>
<td>No clinical alteration</td>
</tr>
<tr>
<td>16</td>
<td>EMP-31</td>
<td>ND MC, 10 Months</td>
<td>Flat type warts on shoulder, neck and lumbar region, n=47, 3-4 cm</td>
<td>No alteration</td>
</tr>
<tr>
<td>Case No.</td>
<td>Code</td>
<td>Species</td>
<td>Age</td>
<td>Description</td>
</tr>
<tr>
<td>---------</td>
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<td>-----</td>
<td>-------------</td>
</tr>
<tr>
<td>17</td>
<td>EMP-35</td>
<td>ND HF, 3 Years</td>
<td>Cauliflower like warts, whole body affection, n=68, 4-5 cm</td>
<td>No clinical alteration</td>
</tr>
<tr>
<td>18</td>
<td>EMP-40</td>
<td>CBJ Cow, 3 Years</td>
<td>Small, frond type warts on teats, n=18, 2-3 cm</td>
<td>Regression started</td>
</tr>
<tr>
<td>19</td>
<td>EMP-49</td>
<td>CBJ Cow, 4 Years</td>
<td>Rice grain type warts on all four teats, n=12, 0.5-2 cm</td>
<td>Regression started</td>
</tr>
<tr>
<td>20</td>
<td>EMP-87</td>
<td>CBJ HF, 2 Years</td>
<td>Squat type warts on head, neck and thorax, n=20, 2-3 cm</td>
<td>Regression started</td>
</tr>
<tr>
<td>21</td>
<td>EMP-88</td>
<td>ND MC, 11 Months</td>
<td>Sessile type warts on facial region, n=12, 1-1.5 cm</td>
<td>No alteration</td>
</tr>
<tr>
<td>22</td>
<td>BKU-6</td>
<td>ND HF, 2 Years</td>
<td>Nodular warts on rump slope, chest and wither, n=16, 2-2.5 cm</td>
<td>Regression started</td>
</tr>
<tr>
<td>23</td>
<td>BKU-9</td>
<td>ND Young bull, 2.5 Years</td>
<td>Pedunculated warts on ear tips, around eyes and chin, n=14, 2-2.5 cm</td>
<td>Regression started</td>
</tr>
<tr>
<td>24</td>
<td>BKU-11</td>
<td>ND MC, 11 Months</td>
<td>Cauliflower like warts on face, eyes, ears and fore limbs below carpus, n=23, 3-4 cm</td>
<td>No alteration</td>
</tr>
<tr>
<td>25</td>
<td>BKU-13</td>
<td>ND BK, 3 Years</td>
<td>Cauliflower like warts on ventral neck, below the hump and on thorax, n=20, 3-3.5 cm</td>
<td>Regression started</td>
</tr>
<tr>
<td>26</td>
<td>BKU-14</td>
<td>ND MC, 11 Months</td>
<td>Vegetative warty growths around left eye, n=20, 1-1.5 cm</td>
<td>Regression started</td>
</tr>
<tr>
<td>27</td>
<td>BKU-39</td>
<td>ND HF, 1.6 Years</td>
<td>Small nodular warts on back and belly, n=4, 0.5-1 cm</td>
<td>Regression started</td>
</tr>
<tr>
<td>28</td>
<td>BKU-41</td>
<td>ND HF, 1.6 Years</td>
<td>Cauliflower like warts on head, neck and wither, n=23, 2-3 cm</td>
<td>Regression started</td>
</tr>
<tr>
<td>29</td>
<td>BKU-43</td>
<td>ND MC, 10 Months</td>
<td>Cauliflower like warts on back, belly and axilla, n=23, 2-4 cm</td>
<td>Regression started</td>
</tr>
<tr>
<td>30</td>
<td>BKU-56</td>
<td>CBJ FC, 10 Months</td>
<td>Flat type wart, n=1, 3 cm</td>
<td>No alteration</td>
</tr>
<tr>
<td>31</td>
<td>BKU-107</td>
<td>ND Cow, 3 Years</td>
<td>Pedunculated warts below the eyes, n=18, 1-3 cm</td>
<td>Regression started</td>
</tr>
<tr>
<td>32</td>
<td>BKU-108</td>
<td>Gir FC, 13 Months</td>
<td>Pedunculated warts below the eyes, n=18, 1-3 cm</td>
<td>Regression started</td>
</tr>
<tr>
<td>33</td>
<td>BKU-109</td>
<td>ND FC, 10 Months</td>
<td>Cauliflower like warts on hind limbs, n=25, 2-3.5 cm</td>
<td>Regression started</td>
</tr>
<tr>
<td>34</td>
<td>BKU-110</td>
<td>CBJ FC, 9 Months</td>
<td>Tag type warts on neck, n=8, 1-1.5 cm</td>
<td>Regression started</td>
</tr>
<tr>
<td>35</td>
<td>BKU-112</td>
<td>ND MC, 11 Months</td>
<td>Whole body affection with nodular warts, n=60, 1-2 cm</td>
<td>Regression started</td>
</tr>
<tr>
<td>36</td>
<td>BKU-114</td>
<td>CBJ FC, 9 Months</td>
<td>Filiform warts, at the point of elbow, n=3, 1-1.5 cm</td>
<td>Regression started</td>
</tr>
<tr>
<td>37</td>
<td>BKU-115</td>
<td>ND FC, 10 Months</td>
<td>Papulomatous nodules on shoulder point, n=1, 1 cm</td>
<td>Regression started</td>
</tr>
<tr>
<td>38</td>
<td>BKU-116</td>
<td>CBJ FC, 9 Months</td>
<td>Dome shaped warts on neck, fore limbs and belly, n=24, 2-3 cm</td>
<td>Regression started</td>
</tr>
<tr>
<td>No.</td>
<td>Code</td>
<td>Species</td>
<td>Age</td>
<td>Description</td>
</tr>
<tr>
<td>-----</td>
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<td>-----</td>
<td>-------------------------------</td>
</tr>
<tr>
<td>39</td>
<td>BKU-117</td>
<td>ND MC, 11 Months</td>
<td></td>
<td>Cauliflower like warts on eyes, ears and back, n=12, 2-3 cm</td>
</tr>
<tr>
<td>40</td>
<td>BKU-118</td>
<td>CBJ Cow, 3 Years</td>
<td></td>
<td>Dome shaped warts on hind limbs, n=23, 2-3 cm</td>
</tr>
<tr>
<td>41</td>
<td>BKU-119</td>
<td>ND FC, 10 Months</td>
<td></td>
<td>Squat type warts on hind limbs and axilla, n=34, 3-4 cm</td>
</tr>
<tr>
<td>42</td>
<td>BKU-120</td>
<td>CBJ HF, 2.5 Years</td>
<td></td>
<td>Cauliflower like wart on shoulder, n=1, 4 cm</td>
</tr>
<tr>
<td>43</td>
<td>HLY-8</td>
<td>Gir HF, 2 Years</td>
<td></td>
<td>Cauliflower like warts on fore limbs, arm pit and thigh, n=14, 2-3 cm</td>
</tr>
<tr>
<td>44</td>
<td>HLY-14</td>
<td>Gir FC, 10 Months</td>
<td></td>
<td>Cauliflower like warts on hind limbs and sacral region, n=30, 3-4 cm</td>
</tr>
<tr>
<td>45</td>
<td>HLY-19</td>
<td>Gir HF, 2 Years</td>
<td></td>
<td>Cauliflower like warts on head, neck and belly, n=14, 2-3 cm</td>
</tr>
</tbody>
</table>
5.7.1.4 Therapeutic response of combined parenteral Anthiomaline and single shot S/C injectin of Ivermectin therapy on bovine papillomatosis

At DPT- 30 regression of warts started in 34 numbers of cases and no clinical alteration was noted in eleven number of cases. On DPT -45, complete regression or sloughing of all the warts occurred in thirty three cases, regression or falling started in another five cases and no regression was noticed in seven cases (Figure-72,A-D). At DPT-75, among rest twelve cases ther were shedding in four cases, about to regress completely in two cases and no regression at all noted in six cases. Alltogether complete clinical cure or complete disappearance of wart lesions occurred in 37 (i.e. 82.22%) cases, partial to moderate recovery in six (i.e. 13.33%) cases and no clinical alteration or regression occurred in two numbers of cases i.e. in 4.44% cases. Results have been presented in the table (Table no-150). The regressions of lesions were observed clinically and histologically (Figure-72, A-D).
### Table-150: Result on clinical trial by combined Parenteral Anthiomaline and single S/C Inj. Ivermectin therapy (n = 45)

<table>
<thead>
<tr>
<th>SL NO</th>
<th>Animal ID</th>
<th>Animal Details</th>
<th>Gross clinical observation with size and number of warts with anatomical location</th>
<th>Clinical recovery status/response of combined Anthiomaline and single shot S/C injection of Ivermectin therapy on BOCP</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>DPT-15</td>
</tr>
<tr>
<td>1</td>
<td>HLY-48</td>
<td>ND HF, 2 Years</td>
<td>Cauliflower like warts on face, neck and dewlap, n = 20, 5-8 cm</td>
<td>No clinical alteration</td>
</tr>
<tr>
<td>2</td>
<td>HLY-54</td>
<td>CBJ HF, 3.5 Years</td>
<td>Cauliflower like warts on neck and back, n = 14, 2-3 cm</td>
<td>Regression started</td>
</tr>
<tr>
<td>3</td>
<td>HLY-64</td>
<td>CBJ HF, 2.5 Years</td>
<td>Dome shaped growth on the ear pinna, neck and fore limb below knee joint, n = 20, 3-4 cm</td>
<td>Regression started</td>
</tr>
<tr>
<td>4</td>
<td>HLY-69</td>
<td>Upgrade Sahiwal HF, 3 Years</td>
<td>Cauliflower like warts on neck and back, n = 14, 2-3 cm</td>
<td>Regression started</td>
</tr>
<tr>
<td>5</td>
<td>HLY-72</td>
<td>CBJ HF, 24 Months</td>
<td>Cauliflower like warts on hind limbs and perineum, n = 20, 5-8 cm</td>
<td>Regression started</td>
</tr>
<tr>
<td>6</td>
<td>HLY-75</td>
<td>Gir HF, 2 Years</td>
<td>Cauliflower like warts on neck and back, n = 46, 5-8 cm</td>
<td>No alteration</td>
</tr>
<tr>
<td>7</td>
<td>HLY-80</td>
<td>CBJ Cow, 5 Years</td>
<td>Rice grain type warts on all four teats, n = 10, 2-3 cm</td>
<td>Regression started</td>
</tr>
<tr>
<td>8</td>
<td>HLY-83</td>
<td>Upgraded RS HF, 3 Years</td>
<td>Cauliflower like warts on neck and back, n = 30, 3-4 cm</td>
<td>Regression started</td>
</tr>
<tr>
<td>9</td>
<td>HLY-86</td>
<td>CBJ HF, 2 Years</td>
<td>Dome shaped growth on the ear pinnae, neck and fore limbs, n = 20, 5-8 cm</td>
<td>No alteration</td>
</tr>
<tr>
<td>10</td>
<td>BBM-4</td>
<td>ND BK, 5 Years</td>
<td>Cauliflower like warts on anal region and tail base, n = 12, 3-4 cm</td>
<td>Regression started</td>
</tr>
<tr>
<td>11</td>
<td>BBM-44</td>
<td>Gir HF, 2 Years</td>
<td>Cauliflower like warts on periorbital skin, n = 18, 2-3 cm</td>
<td>Regression started</td>
</tr>
<tr>
<td>12</td>
<td>BBM-46</td>
<td>CBJ HF, 2.5 Years</td>
<td>Pedunculated warts on fore limbs and shoulder, n = 20, 3-4 cm</td>
<td>No clinical alteration</td>
</tr>
<tr>
<td>ID</td>
<td>Code</td>
<td>Breed, Age</td>
<td>Description</td>
<td>Treatment Start</td>
</tr>
<tr>
<td>-----</td>
<td>-------</td>
<td>------------</td>
<td>-------------------------------------------------------</td>
<td>-----------------</td>
</tr>
<tr>
<td>13</td>
<td>DJG-3</td>
<td>ND HF, 2 Years</td>
<td>Vegetative solid out growth on peri orbital skin, n = 12, 2-3 cm</td>
<td>Regression started</td>
</tr>
<tr>
<td>14</td>
<td>DJG-5</td>
<td>Siri Cow, 4 Years</td>
<td>Frond type warts on teats, n = 6, 1-1.5 cm</td>
<td>Regression started</td>
</tr>
<tr>
<td>15</td>
<td>DJG-16</td>
<td>CBJ Cow, 4 Years</td>
<td>Round pedunculated warts on head, neck and belly, n = 15, 3-4 cm</td>
<td>Regression started</td>
</tr>
<tr>
<td>16</td>
<td>DJG-18</td>
<td>Local Hilly Cow, 4 Years</td>
<td>Nodular warts on teats, n = 8, 1-3 cm</td>
<td>Regression started</td>
</tr>
<tr>
<td>17</td>
<td>DJG-20</td>
<td>CBJ HF, 4 Years</td>
<td>Dome shaped round and pea sized warts on nasal ridge, face and neck, n = 16, 2-4 cm</td>
<td>Regression started</td>
</tr>
<tr>
<td>18</td>
<td>DJG-27</td>
<td>CBJ HF, 2 Years</td>
<td>Fibropapilloma on head, neck and belly, n = 9, 4-5 cm</td>
<td>No alteration</td>
</tr>
<tr>
<td>19</td>
<td>DJG-32</td>
<td>CBJ HF, 4 Years</td>
<td>Pedunculated warts on peri orbital skin and ear base, n = 9, 4-5 cm</td>
<td>Regression started</td>
</tr>
<tr>
<td>20</td>
<td>DJG-34</td>
<td>ND HF, 2 Years</td>
<td>Dome shaped warts on all four teats, n = 12, 3-4 cm</td>
<td>Regression started</td>
</tr>
<tr>
<td>21</td>
<td>DJG-36</td>
<td>CBJ HF, 1.5 Years</td>
<td>Cauliflower like warts on fore limbs and base line of the belly, n = 18, 2-3 cm</td>
<td>Regression started</td>
</tr>
<tr>
<td>22</td>
<td>DJG-38</td>
<td>CBJ HF, 1.5 Years</td>
<td>Conical warts on peri-ano-genital region, n = 8, 2-3 cm</td>
<td>Regression started</td>
</tr>
<tr>
<td>23</td>
<td>DJG-41</td>
<td>CBJ HF, 4 Years</td>
<td>Cauliflower like warts on peri orbital skin and ear base, n = 8, 2-3 cm</td>
<td>Regression started</td>
</tr>
<tr>
<td>24</td>
<td>DJG-43</td>
<td>ND HF, 2 Years</td>
<td>Raised nodular growths on cheek, around eyes and fore limbs, n = 16, 2-3 cm</td>
<td>Regression started</td>
</tr>
<tr>
<td>25</td>
<td>BDN-6</td>
<td>CBJ HF, 2 Years</td>
<td>Cauliflower like warts left flank, axilla and left thigh, n = 20, 2-3 cm</td>
<td>Regression started</td>
</tr>
<tr>
<td>26</td>
<td>BDN-16</td>
<td>CBJ HF, 3 Years</td>
<td>Axilla and medial aspect of right thigh, n = 23, 3 cm</td>
<td>Regression started</td>
</tr>
<tr>
<td>27</td>
<td>BDN-17</td>
<td>Gir HF, 3 Years</td>
<td>Sessile and tag type warts on head, neck and face, n = 12, 1-2 cm</td>
<td>Regression started</td>
</tr>
<tr>
<td>28</td>
<td>NTP-8</td>
<td>MBF (She buffalo), 4 Years</td>
<td>Frond type warts on teats, n = 12, 2-3 cm</td>
<td>Regression started</td>
</tr>
<tr>
<td>No.</td>
<td>ID</td>
<td>Breed</td>
<td>Age</td>
<td>Description</td>
</tr>
<tr>
<td>-----</td>
<td>-------</td>
<td>--------</td>
<td>--------</td>
<td>------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>29</td>
<td>NTP-32</td>
<td>ND MC, 11 Months</td>
<td>Black dot like warts on face and neck bilaterally, n = 25, 0.5-0.8 cm</td>
<td>Regression started</td>
</tr>
<tr>
<td>30</td>
<td>NTP-33</td>
<td>RS HF, 2.5 Years</td>
<td>Pedunculated warts on neck and shoulder, n = 20, 3-4 cm</td>
<td>No alteration</td>
</tr>
<tr>
<td>31</td>
<td>NTP-37</td>
<td>CBJ HF, 2.5 Years</td>
<td>Dome shaped and small nodular magotized dorsal neck, warts on ear, face, and body, n&gt;50, 2-3 cm</td>
<td>Regression started</td>
</tr>
<tr>
<td>32</td>
<td>NTP-39</td>
<td>Gir HF, 3 Years</td>
<td>Cauliflower like warts on left upper eye lid, left jaw and right ear, n = 12, 2-2.5 cm</td>
<td>Regression started</td>
</tr>
<tr>
<td>33</td>
<td>NTP-41</td>
<td>Gir HF, 1.5 Years</td>
<td>Flat, dome shaped warts on neck, throat and above the eye, n = 18, 2-2.5 cm</td>
<td>Regression started</td>
</tr>
<tr>
<td>34</td>
<td>NTP-42</td>
<td>CBJ HF, 2.5 Years</td>
<td>Cauliflower like warts on tail base and hind legs below hock, n = 15, 3-5 cm</td>
<td>Regression started</td>
</tr>
<tr>
<td>35</td>
<td>NTP-44</td>
<td>CBJ HF, 2.5 Years</td>
<td>Cauliflower like warts on fore head and hind leg, n = 21, 2-3 cm</td>
<td>Regression started</td>
</tr>
<tr>
<td>36</td>
<td>NTP-46</td>
<td>CBJ HF, 2.5 Years</td>
<td>Cauliflower like warts on neck and shoulder, n = 8, 2-3 cm</td>
<td>Regression started</td>
</tr>
<tr>
<td>37</td>
<td>NTP-47</td>
<td>ND HF, 2.5 Years</td>
<td>Cauliflower like warts on hind limbs below hock, n = 20, 2-3 cm</td>
<td>Regression started</td>
</tr>
<tr>
<td>38</td>
<td>NTP-48</td>
<td>CBJ HF, 2.5 Years</td>
<td>Flat and round warts on fore limbs, n = 16, 2-2.5 cm</td>
<td>No alteration</td>
</tr>
<tr>
<td>39</td>
<td>NTP-49</td>
<td>CBJ FC, 10 Months</td>
<td>Dome shaped warts on right side of thorax and abdomen, n = 16, 2-2.5 cm</td>
<td>Regression started</td>
</tr>
<tr>
<td>40</td>
<td>NTP-52</td>
<td>CBJ HF, 2.5 Years</td>
<td>CBJ HF, 2.5 Years left neck and shoulder, n = 7, 2.5 cm-3 cm</td>
<td>Regression started</td>
</tr>
<tr>
<td>41</td>
<td>NTP-54</td>
<td>CBJ HF, 2.5 Years</td>
<td>Dome shaped warts on right neck and right fore limb, n = 17, 2.5 -3 cm</td>
<td>No alteration</td>
</tr>
<tr>
<td>42</td>
<td>CBR-3</td>
<td>CBM MC, 14 Months</td>
<td>Cauliflower like warts around the scrotum, axilla and anus, n = 15,3-4 cm</td>
<td>Regression started</td>
</tr>
<tr>
<td>43</td>
<td>CBR-5</td>
<td>CBM Cow, 3 Years</td>
<td>Sessile type warts on neck, chest and belly, n = 35, 3-4 cm</td>
<td>No alteration</td>
</tr>
<tr>
<td>44</td>
<td>CBR-6</td>
<td>ND BK, 4 Years</td>
<td>Cauliflower like warts fore limbs, back and belly, n = 15, 3-7 cm</td>
<td>Regression started</td>
</tr>
<tr>
<td>45</td>
<td>CBR-7</td>
<td>ND BK, 3 Years</td>
<td>Cauliflower like wart on head, neck, left fore armpit and thigh, n = 15, 3-4 cm</td>
<td>No alteration</td>
</tr>
</tbody>
</table>
Having treated with anthiomaline alone, caused 77.77% complete wart recovery in infected animals and with anthiomaline in conjunction with S/C ivermectin therapy caused 82.22% clinical recovery showing better therapeutic response and or effectiveness in combined therapy on bovine cutaneous papillomatosis. Anthiomaline had its response on warts regression by virtue of cutting down the blood supply of the papillomatous growth and thereby caused ischaemic gangrene or necrosis of the warts. Inj Ivermectin played synergistic action and hastened clinical recovery. Non-specific stimulation of the immune system as well as anti-tumour effect of Injection anthiomaline might have hastened the clinical recovery. Of course better therapeutic response was observed in squat type or pedunculated warts and small nodular and cauliflower like warts (Figure-72, A-D). Response of anthiomaline on large sessile type fibropapillomatous lesions was poor.