CHAPTER I

ETHNOPHARMACOLOGICAL STUDY OF SOME PLANT PRODUCTS USED FOR ANTISTRESS ACTIVITY BY THE TRIBAL COMMUNITY OF THE DISTRICT COOCH BEHAR, WEST BENGAL, INDIA.
INTRODUCTION

Our country is commonly called the Botanical Garden of the world, owing to her wealth of herbal medicines. India with its great topographic and climatic diversity has very rich and diverse flora and fauna. The uses of plants as medicines have been practiced from the ancient times. From around 1500 B.C. Rig Veda is one of the important earliest available documents which emphasizes about herbal medicinal knowledge. Later on Indian herbalists such as Maharshi Charaka and Sushruta worked in search of different herbal plant parts for different ailments of human body.

Later on, it is reported that traditional healers use near about 2500 plant species and 100 species of plants which serve as regular sources of medicine (Pei et al., 2001). World Health Organization has stated that 80% of the world’s population depends on traditional medicine for its primary health care and has become indispensable for its survival (Hiremath et al., 2013). Since times immemorial, plants have been put to medicinal use by the traditional herbalists, Hakims, Vaidays, Ayurvedic practioners and the common man. Herbal medicine is the study and use of medicinal properties of plants. Therefore medicinal plants constitute precious resources for mankind. During the past century, there has been a rapid extension of allopathic medicinal treatment in India but still now the use of natural products as medicine, especially plant products are widely used among various tribal people particularly in the remote areas of West Bengal with few health facilities.

About 70% of Indian population inhabits in rural areas and many of them reside in the vicinity of forest and use various plant parts as food, medicines, and in many other purposes for their daily livelihood. Indian people are using medicinal plants from prehistoric period. Indigenous healing practices have been culturally accepted during phases of human culture and environmental evolution. Traditional medicine is widely used and accounts for about 40% of all health care delivered (Hiremath et al., 2013). About 85% of traditional medicines are plant derived (Namahata and Mukherjee, 1998). Medicinal plants have a long-standing history in many indigenous communities, and are an integral part for treating various diseases, particularly to cure daily ailments and this practice of traditional medicine is based on hundreds of years of belief and observations. Almost every section of Indian population use plants as medicine and altogether about
7500 species of plants are being used by several ethnic communities. Particularly, tribal people collect and preserve locally available wild and cultivated plant species and practice herbal medicine to treat a variety of diseases and disorders. With enormously diversified ethnic groups and rich biological resources, India represents one of the great emporia of ethno botanical wealth (Namahata and Mukherjee, 1989). In developing countries, there is an increasing attempt to incorporate traditional medicines, especially herbal preparations in the local health care systems and many modern researchers are involved today to explore the huge potential of ethno botanical knowledge for treating various diseases (Mondal et al., 2012). However, the ethno medicinal plants are under threat due to deforestation, overgrazing and their reckless utilization. So, it indicates the urgent need of their conservation. Conservation of biological resources as well as their sustainable use is important in preservation of traditional knowledge (Mallick et al., 2012).

In spite of researches about use and status of medicinal plants in various parts of India, no such scientific documentation has been made in Coochbehar District of West Bengal so far. So we designed this study to survey the use of medicinal plants among tribal people of Coochbehar District, as well as to check the recent status of the medicinal plants in this area.

Tribal societies, throughout the world, have their respective system of medicines. Their concepts and attitudes towards the diseases, and the pharmacopeia are different. They also impose prohibition on some specific diets during illness and convalescence. Traditional tribal medicine is an age-old medical practice that existed in human societies before the application of modern science health. It has evolved to reflect different philosophy.

Various salts, minerals, metals and medicinal plants are the therapeutic agents in the siddha system of medicine. 365 plants or plant parts are listed by Chopra (1958) as the vegetable products commonly used in Ayurvedic, Unani, and Siddha system of medicine. Almost the entire world has now recognised the value and importance of traditional medicinal plants that are employed in Ayurveda.

Several books have been published regarding Tribal medicines in the last two decades representing almost all regions of India from North (Sood et al., 2001 on N. W. Himalayas) to south (Rama Rao and Henry, 1966 on Andhra), from west (Pandey et al., 1998 on Rajasthan) to east (Saklani and Jain, 1994) and on many other parts of northern (Maheswari et al., 1981), central (Varghese and Hembrom, 2000), and Peninsular India (Vedavathy et al., 1977).

One comprehensive Dictionary (Jain, 1991) summarised the information published till 1990 on over 2500 plants. A detailed bibliography work on Indian ethnobotany (Jain, 2002) has brought certain facts and also trends in research. The review of Indian ethno botanical literature cover approximately the period of 1982-2000 (Jain and Srivastava, 2001).
An ethnobotanical survey was carried out by Kottaimuthu (2008) in the Karandamalai, Southern Eastern Ghats of Tamilnadu, a village inhabited by Valaiyans Tamilnadu. From the interview report 63 plant species are enumerated and listed from the tribal communities of Tamilnadu.

A research paper presented by (Behera et al., 2007) describing some of the important medicinal species used by local baidya and tribal healers of tribal rich District of Orissa because there is a vast expanse and scope for medicinal plant heritage in tribal areas of Orissa.

A detailed study has been made among the Gonda tribe residing at Naoradehi Wild Life Sanctuary, Madhyapradesh. These plants are used for fever, chest pain, bone fracture, headache, vomiting, abortion, snake bite, ear pain and ulcer etc. (Tiwari and Jadav, 2003).

A detailed study has been made by (Agarwala and Mishra, 2010). *Calotropis gigantea* (Asclepiadaceae) known as Akanda is being used in traditional medicines and contains cardiac glycosides, alkaloids, flavonoids, tannins, reducing sugars etc. It has been found to have analgesic, antipyretic, pregnancy interceptive, CNS, anti-inflammatory, pro-coagulant, anti-diarrheal, free radical scavenging, antimicrobial, anti-tumour, antifungal activities.

Oxidative stress, due to excessive generation of oxygen free radicals (OFR), with concomitant depletion of certain key endogenous antioxidant compounds, such as superoxide, reduced glutathione, and catalase play an important role in the IRI heart (Ferrari, 1991). A high degree of in vitro study of scavenging activity of the bark of different plants of the genus *Terminalia* sp has been documented (Maulik, 1997).

Nujhat and Nazam, (2012) observed the use of *Aloe vera* for CNS activities in mice. Different behavioural activities for anxiety and depression were tested on Exploratory activity, Open field test, Swimming –induced Depression test, Stationary Rod, Cage Crossing and Inclined Plane test. *Aloe vera* was administered orally in both sexes of mice and was found to cause significant changes in behaviour of mice and it acts as anti-depressant agent.

Depression in general as well as exploratory behavioural profiles, is found that uses of *Aloe vera* may reduce movement of laboratory animal when apply on Open field test provides the measurement in term of frequency of squares crossed, used as measure for exploration and locomotion (Ajibade, 2012).

Through different study (Ardekani et al., 2003; Davis et al., 2003, Kubicki et al., 2005), pointed out that in schizophrenic condition brain ventricles are enlarged and white matter abnormalities are seen in open field and swimming study and in some other studies but these abnormalities are reduced by using *Aloe vera*. In recent years, study of ethno botany has been given much attention due to its wide application in community health care. In India and other parts of Asia many works have been
done aimed at documenting knowledge of traditional medicinal plants. Indian medical heritage is perhaps the longest unbroken one in human civilization. North East India inhabiting more than 150 tribes speaking as many languages, the region is melting pot of cultural mosaic of people and races, and ethnic knowledge of many hues and shades (Dutta and Dutta, 2005).

Koch Rajbangshi or Rajbangshi is one of the most ancient tribe of Assam. They belong to the Mongoloid race and are very closely allied to Kacharies and Garos (Gait 1906; Barua and Phukan, 1999). Koches group of people belong to Kachari and other tribes which converted themselves to Hinduism; while Rajbangshi literally means the ‘Royal community’. The term Koch and Rajbangshi are both synonymous and indicate the tribe which was once dominated North Bengal, Goalpara and North side of Brahmaputra River (Gait, 1906). They use to speak their own dialect (Barua and Phukan, 1999) called Rajbangshi language. They have their rich cultural heritage. They exhibit their culture by observing Bisuwa during the month of April. They perform ritual believes like ‘Bansh Puja’ which means the worship of bamboo; Garja puja, worship of village deity; Maroi Puja which means worship of Maa Manasha (Goddess of Snake). They are distributed all over Assam and North Bengal, eastern part of Bihar, Meghalaya, Eastern Nepal and in some parts of Bangladesh. They are the most dominant tribe in Bongaigaon District of Assam which is the part of old Bijni Raj Estate (Choudhury, 1969).
Aims of the study

In recent years, uncontrolled exploitation by Multinationals has resulted in the loss of rich biodiversity of India, which has an immense wealth of about 45,000 species of wild plants of which 7500 species are used for medicinal purposes. The tribal people are the real custodian of medicinal plants. The knowledge of drugs goes back to prehistoric times. In general the tribes show many similarities in regard to medicine, but the actual agents employed differ with the tribes and localities, as well as with individual healers. Magic, prayers, songs, exhortation, suggestion and mechanical processes are employed only by the medicine-men; other specific remedies and simple manipulations are of common knowledge in a given locality. There are a number of indigenous practices, which in corporate considerable amount of practical knowledge, derived over centuries of experience in the use of herbs and other substances to cure varieties of diseases. The tribal come to know the efficacy of herbs through uses. Use of herbs is guided by this randomly or formally gained experience. The knowledge is often passed from one generation to the next. The choice of herbs and treatment depends according to the availability of plants in the neighbouring areas. In recent times, focus on plant research has increased all over the world and a large body of evidence has collected to show immense potential of medicinal plants used in various traditional systems. This century has witnessed many great achievements in the field of medicine.

There are a number of advantages associated with using herbal medicines.

Advantages

- Reduced risk of side effects
- Effectives with chronic conditions
- Lower cost
- Widespread availability

Disadvantages

- Inappropriate for many conditions
- Lack of dosage instructions
- Poison risk associated with wild herbs
- Lack of regulation
The Koch Rajbangshi people use various wild and cultivated plants as medicine for curing different diseases. They completely or partially depend upon these plants for curing various diseases. The plants are mostly used as first aid treatment in most of the diseases. In almost every village there is a medical man who generally knows the traditional uses of the plants. There are some ritual believes also associated with these medicinal plants. A good number of these plants are also included in their daily diet. Above all, the plants have also some market value, thus playing an important socio-economic role among the people of the various tribal people. With the use of modern day medical techniques the traditional health care system is now at the verge of extinction. In the present work, the Researcher tried to document the plants used for the medicinal purposes in the, District Coochbehar of the North Bengal region. To create a database of traditional knowledge and use pattern of plants by Koch or Rajbangshi people in the region all the plants with its uses are documented in this study.

**Methodology**

The knowledge about medicinal plants and uses of plants in treatment among the tribal groups are often limited to a few number of people in the community who are recognised as medicine-men or kaviraj or vaidya. These persons are generally well known to the local area as well as far away. In each locality, there are several recognised medicine-men. Another type of people, who generally believes on God and evil spirit, are known as Ojha. They treat the patients both with plant medicines and their spiritual power. Very often the people are involved in the act of naturalization of the effect of evil power and witch craft.

At first the medicinemen and the community members who are knowledgeable in medicinal plant identification and usage of an area were identified by interrogation and were also requested to help in collecting data. The tribal people are usually very conservative to disclose their knowledge about the plant medicines. They explained their power to treat diseases and about their patients but they do not about the name of plants. The tribal people believe that the efficacy of the therapy is lost if they disclose it to the strangers, who have no faith in nature and their medicines. They have fear also to create new competition. However, after realizing the purpose of the study, most of the medicinemen cooperated with us. The effectiveness of the medicines was also asked to the patients present there.

The collected plants were preserved in a herbarium sheet, identification of the plants was confirmed by the Botanical Survey Of India, Kolkata and Prof. G.G Maity, Department of Botany, University
of Kalyani, West Bengal. Identified plants were described with the help of ‘Bengal Plants’ (Prain, 1903), Herbal options (T.K. Chatterjee, 2003), Tribal medicine (Pal & Jain, 1998).

List of plants in controlling different diseases by the tribal medicine-men of the District Coochbehar is presented in the Table No: 1.
List of some medicines prepared by various medicinemen are described here in separate headings.

GEOGRAPHICAL ASPECTS OF THE COOCH BEHAR DISTRICT

Habitation

The homelands of Koch Rajbongshi people comprises their ancient Kingdom, Kamatapur, Kochrajbongshi Kingdom, Kamarupa Kingdom they inhabit in entire Assam, Total Parts of the present West Bengal, Nepal and Bangladesh. They are the majority in Assam and while comparing the North Bengal, Koch Rajbongshi community have majority of the population. Koch Rajbongshi people stay very close to nature. It is a Tradition for Koch Rajbonshi Men to go hunting in the wild, they usually go in a Group for Hunting. Rajbonshi people have their ancient tradition of treatment which is not very well known to the modern medicine world, the significant medicine that they use is not known to even Ayurveda Medicine Scientists. The tradition of this medicine is passed orally from one generation to another and not shared to the foreign element, because it is prohibited during the education process from the ancestor, the knowledge can be only given from one generation to another within the community.

Etymology

The name CoochBehar is derived from the name of the Koch or Rajbongshi tribes indigenous to this region for many centuries. The word Behar is derived from Sanskrit: vihara. The princely state known during British rule as Coochbehar had been part of the Kamarupa Kingdom from the 4th century to the 12th century. In the 12th century, the area became a part of the Kamata Kingdom, first ruled by the Khen dynasty from their capital at Kamatapur. The Khens were an indigenous tribe, and they ruled till about 1498 CE, when they fell to Alauddin Hussain Shah, the independent Pathan Sultan of Gour. The new invaders fought with the local Bhuyan chieftains and the Ahom king Suhungmung and lost control of the region. During this time, the Koch tribe became very powerful and proclaimed itself Kamateshwar (Lord of Kamata) and established the Koch Dynasty.

Geography
CoochBehar is situated in the foothills of Eastern Himalayas, located at 26°22'N 89°29'E in the north of West Bengal. The Torsa river flows by the western side of town. Heavy rains in the area often cause strong river currents and flooding. The turbulent water carries huge amounts of sand, silt, and pebbles, which have an adverse effect on crop production as well as on the hydrology of the region. Alluvial deposits form the soil, which is acidic. Soil depth varies from 15 cm to 50 cm, superimposed on a bed of sand. The soil has low levels of nitrogen with moderate levels of potassium and phosphorus. Deficiencies of boron, zinc, calcium, magnesium, and sulphur are high. The town of Cooch Behar and its surrounding regions face deforestation due to increasing demand for fuel and timber, as well as air pollution from increasing vehicular traffic. The local flora include palms, bamboos, creepers, ferns, orchids, aquatic plants, fungi, timber, grass, vegetables, and fruit trees. Migratory birds, along with many local species, are found in the city, especially around the Sagardighi and other water bodies.
Fig:1. Map of West Bengal
Fig.2: District map of Cooch Behar
Climate

Five distinct seasons (summer, monsoons, autumn, winter and spring) can be observed in Coochbehar, of which summer, monsoons and winter are more prominent. Coochbehar has a moderate climate characterised by heavy rainfall during the monsoons and slight rainfall from October to mid-November. Average annual rainfall in the district is 3,201 mm. The summer season is from April, the hottest month, to May. During the summer season, the mean daily maximum temperature is 36.5°C, and the mean daily minimum is 20.2 °C. The winter season lasts from the end of November to February; January is the coldest, when temperature ranges between 10.4 °C and 24.1 °C. The lowest and highest temperatures recorded have been 3.9 °C and 39.9 °C respectively. The humidity is around 50 to 70 percent. However, the climate has undergone a drastic change in the past few years, with the mercury rising and the rainfall decreasing each year.

Soil

Being the district near the Eastern Himalayan foothills, after rains the water carries sand, silt, pebbles which causes many problems in productivity as well as hydrology. The soil is formed by alluvial deposits and is acidic in nature. It is friable loam to sandy loam ranging in depth from 0.15 to 1-metre. The soil has a low level of nitrogen while potassium and phosphorus levels are medium. Deficiency of zinc, calcium, magnesium and sulphur is quite high.

Rivers and Topography

Cooch Behar is a flat country with a slight south-eastern slope along which the main rivers of the district flow. Most of the highland areas are in the Sitalkuchi region and most of the low-lying lands lie in Dinhata region.

The rivers in the district of Coochbehar generally flow from northwest to southeast. These are the Teesta, Jaldhaka, Torsha, Kaljani, Raidak, Gadadhar and Ghargharia.
Agriculture

The agricultural area of Coochbehar is 2530.63 square kilometres. The dominant agricultural products of Coochbehar district are jute and tobacco. Paddy rice is also grown before and after the rainy season. Common plantation crop are coconut and black pepper. Vegetable, mustard plant, and potato cultivation are increasing. In order to support agriculture, special programs have been taken for the production of sunflowers, maize and groundnuts. Revolutionary methods are being used in Boro paddy and potato cultivation. Only 33% of the potentially cultivable land is developed for irrigation. In Kharif, the area of production of vegetables and other crops is much less. Farming is a major source of livelihood for the nearby rural populace, and it supplies the town with fruits and vegetables. Poorer sections of this semi-rural society are involved in transport, basic agriculture, small shops and manual labour in construction.

Culture

Popular festivals in Coochbehar include, Durga Puja in October, along with Ras Purnima, when a big fair is organised in the town near the famous Madan Mohan Temple. Cooch Behar Ras mela is the oldest in the North Bengal region. Other major festivals celebrated in the region include Pohela Baishakh (Bengali New year), Rathayatra, Dolyatra or Basanta - Utsab, Diwali, Poush parbon (festival of Poush), Christmas, Eid ul-Fitr and Eid ul-Adha. Coochbehar has a mixture of cultures, similar to those of West Bengal and Bangladesh. Kolkata. The local dialect is more closer to that of East Bengal and a mix of Assamese and Rajbangsi language. The Madan Mohan Temple, Bara Debi Bari and Rajmata Temple are centres of religious and cultural importance.

Bhawaiya folk song of Cooch Behar district

There is various view point regarding the meaning of Bhawaiya. Low lying land with shrub and other vegetable are called Bhawa. Buffalo keepers used to sing this song while ploughing. Hence the name Bhawaiya came to exist. According to some other researcher Bhawaiya is derived from the word Bawaiya which is subsequently derived from the word bao (breeze). The derivative of the word Bhawaiya is Bhav > Bhao + Iya = Bhawaiya. It has a meaning of deep feeling or love or melancholy.
Fig: 3,4. Tribal medicinemen are preparing herbal medicines at their house of Baraghoria, Mathabhanga, Dist. Cooch Behar.

Fig: 5,6. Medicine men selling different herbal medicine at village Doluarpar, Mathavanga block-I, Dist. Cooch Behar.
Fig: 7, 8. Tribal medicine men engage in preparing herbal medicine at the house Bairagir hat, Ghoksa Danga, Mathabhanga block II, Dist. Cooch Behar.

Fig: 9, 10. Tribal medicine men of Village Shitai of Shitalkuchi, are showing medicinal plants.
Table 1: List of plants prescribed by the tribal medicine-men of the District Coochbehar for the treatment of various types of diseases

<table>
<thead>
<tr>
<th>Serial No.</th>
<th>Scientific names of species</th>
<th>Local names of species</th>
<th>Names of respective families</th>
<th>Part used</th>
<th>Prescription</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td><em>Curcuma domestica</em> Valeton</td>
<td>Haldi</td>
<td>Zingiberaceae</td>
<td>Rhizome</td>
<td>Rhizome of the plant used in diabetes and jaundice. 1 teaspoonful paste of rhizome taken with rice for 7 days.</td>
</tr>
<tr>
<td>2.</td>
<td><em>Allium sativum</em> L.</td>
<td>Rasun</td>
<td>Ailliaceae</td>
<td>Bulbs</td>
<td>Bulb of the plant is used in diabetes and in high blood pressure, in dropsy, ear-ache, and skin diseases.</td>
</tr>
<tr>
<td>4.</td>
<td><em>Terminalia chebula</em> (Gaertn) Retz.</td>
<td>Haritaki</td>
<td>Combretaceae</td>
<td>Fruit</td>
<td>The fruit is used in stomachache, constipation, and diabetes. Decoction of fruit taken for 1 week, daily once in empty stomach.</td>
</tr>
<tr>
<td>6.</td>
<td><em>Withania somnifera</em> (L.) Dunal</td>
<td>Ashwagandha</td>
<td>Solanaceae</td>
<td>Roots , leaves</td>
<td>Extract of fresh leaves and roots used as nervine tonic increased libido, also used in diabetes. 1 cup extract taken for two week, twice daily.</td>
</tr>
<tr>
<td>7.</td>
<td><em>Jatropha gossypifolia</em> L.</td>
<td>Varendfa</td>
<td>Euphorbeaceae</td>
<td>Stems and leaves</td>
<td>Extract of leaves and stems used as inducer of male fertility. 1/2 cup extract taken for a month, twice regularly.</td>
</tr>
<tr>
<td>9.</td>
<td><em>Rouvolfia serpentina</em> (L.) Benth.ex kurz</td>
<td>Sarpagandha</td>
<td>Apocynaceae</td>
<td>Roots</td>
<td>Roots extract used in diabetes, and prevent hyper tension. 2-4 teaspoonful extract taken for 7 days.</td>
</tr>
<tr>
<td>No.</td>
<td><strong>Species</strong></td>
<td><strong>Common Name</strong></td>
<td><strong>Family</strong></td>
<td><strong>Part Used</strong></td>
<td><strong>Use</strong></td>
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<td>---------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>10</td>
<td><em>Bacopa monniera</em> (L.) Penn.</td>
<td>Brahmi</td>
<td>Scrophulariaceae</td>
<td>Leaves</td>
<td>Extract of fresh leaves used in diabetes and used as nervine tonic. 1/2 cup leaves extract taken for 7 days.</td>
</tr>
<tr>
<td>11</td>
<td><em>Bryophyllum pinnatum</em> (Lam.) Kurz</td>
<td>Patharkuchi</td>
<td>Crassulaceae</td>
<td>Leaves</td>
<td>Pulp of fresh leaves used in diabetes. 1 teaspoonful pulp taken for 10-14 days, once regularly.</td>
</tr>
<tr>
<td>12</td>
<td><em>Phoenix sylvestris</em> (L.) Roxb.</td>
<td>Khejur</td>
<td>Palmae</td>
<td>Fruits</td>
<td>2 teaspoonful extract of fresh fruits used to prevent cholesterol and prevent diabetes. Taken for two weeks.</td>
</tr>
<tr>
<td>13</td>
<td><em>Papaver somniferum</em> L.</td>
<td>Posto</td>
<td>Papaveraceae</td>
<td>Seeds</td>
<td>Paste of seeds used to prevent insomnia, induce sleep, relief pain. 1 teaspoonful paste taken for 15 days give good result.</td>
</tr>
<tr>
<td>14</td>
<td><em>Pimpinella anisum</em> L.</td>
<td>Mouri</td>
<td>Umbelliferae</td>
<td>Seeds</td>
<td>Used in in-digestion. 2-5 gm seeds with water taken for 5-7 days in empty stomach, once in a day.</td>
</tr>
<tr>
<td>15</td>
<td><em>Vigna aconitifolia</em> (Jacq.) Marechal</td>
<td>Math/moch</td>
<td>Papilionaceae</td>
<td>Leaves</td>
<td>Fresh leaves extract used to prevent pyorrhoea and jaundice. 2 teaspoonful extract taken for 7 days.</td>
</tr>
<tr>
<td>16</td>
<td><em>Datura stramonium</em> L.</td>
<td>Kaladhutura</td>
<td>Solanaceae</td>
<td>Seeds</td>
<td>Seeds used in diabetes, anti stress agent and act as pain killer. 3-5 gm powder mixed with water and taken for 14 days.</td>
</tr>
<tr>
<td>17</td>
<td><em>Piper chaba</em> Hunter.</td>
<td>Choi</td>
<td>Piperaceae</td>
<td>Leaves</td>
<td>1 cup of fresh leaves extract mixed with 1/2 cup milk and taken for the treatment of dysentery, continued for 5 days, twice regularly.</td>
</tr>
<tr>
<td>19</td>
<td><em>Ludwigia perennis</em> L. Rocxb.</td>
<td>Kalo-keshari</td>
<td>Onagraceae</td>
<td>Stems and leaves</td>
<td>Both stems and leaves extract used as hair fertilizer applied on scalp for one month.</td>
</tr>
<tr>
<td>20</td>
<td><em>Scoparia dulcis</em> L.</td>
<td>Chiniswar</td>
<td>Scrophulariaceae</td>
<td>Whole plant</td>
<td>Whole plant used in diabetes, juice of fresh plant applied in cut and wounds to stop bleeding. 1 teaspoon full of fresh leaves extract used</td>
</tr>
</tbody>
</table>
in fever, cough and in jaundice, bronchitis, gastric ulcer.

<table>
<thead>
<tr>
<th>No.</th>
<th>Scientific Name</th>
<th>Common Name</th>
<th>Family</th>
<th>Part Used</th>
<th>Medical Uses</th>
</tr>
</thead>
<tbody>
<tr>
<td>21.</td>
<td><em>Eucalyptus globulus</em> Labill.</td>
<td>Eucalyptus</td>
<td>Myrtaceae</td>
<td>Leaves</td>
<td>Used in cough and cold, 1 teaspoonful of fresh leaves extract used as balm in the remedy of headache and continued for four days twice daily.</td>
</tr>
<tr>
<td>22.</td>
<td><em>Ocimum sanctum</em> L.</td>
<td>Tulsi</td>
<td>Labiatae</td>
<td>Leaves</td>
<td>Leaves used in cold and cough and cold. 2 teaspoonful fresh leaves extract with honey taken for 3 days twice regularly, also used as antistress agent.</td>
</tr>
<tr>
<td>23.</td>
<td><em>Calotropis gigantea</em> R.Br.ex Aiton</td>
<td>Akanda</td>
<td>Asclepiadaceae</td>
<td>Leaves, bark of the root and latex</td>
<td>Leaves used for relieving pain in rheumatism. Latex is used in curing piles, ring worm; bark used in treatment of skin diseases.</td>
</tr>
<tr>
<td>24.</td>
<td><em>Enhydra fluctuans</em> Lour</td>
<td>Halencha</td>
<td>Asteraceae</td>
<td>Leaves</td>
<td>One cup fresh leaves extract taken daily at morning for a month. It used as remedy of diabetes.</td>
</tr>
<tr>
<td>25.</td>
<td><em>Terminalia arjuna</em> (Roxb.exDC.) Wt.&amp;Arn.</td>
<td>Arjun</td>
<td>Combretaceae</td>
<td>Stem</td>
<td>3 teaspoonful paste prepared with the powder of stem and mixed with water taken once daily in the morning in empty stomach in the treatment of hyper tension and diabetes and continued for two weeks.</td>
</tr>
<tr>
<td>26.</td>
<td><em>Mimosa pudica</em> L.</td>
<td>Lajjabati</td>
<td>Mimosaceae</td>
<td>Whole plant</td>
<td>2 teaspoonful of whole plant extract taken orally for 1 month to induce male fertility, also used in indigestion.</td>
</tr>
<tr>
<td>27.</td>
<td><em>Bombax ceiba</em> L.</td>
<td>Shimul</td>
<td>Bombacaceae</td>
<td>Seeds</td>
<td>Oil obtained from seeds used as purgative.</td>
</tr>
<tr>
<td>29.</td>
<td><em>Nyctanthes arbor-tristis</em> L.</td>
<td>Shiuli</td>
<td>Oleaceae</td>
<td>Leaves</td>
<td>2 tea spoonful of leaves juice of fresh leaves with warm water taken for the remedy of cough and fever.</td>
</tr>
<tr>
<td>No.</td>
<td>Scientific Name</td>
<td>Common Name</td>
<td>Family</td>
<td>Part Used</td>
<td>Use</td>
</tr>
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</tr>
<tr>
<td>30.</td>
<td><em>Ficus benghalensis</em> L.</td>
<td>Krishnapata</td>
<td>Moraceae</td>
<td>Leaves</td>
<td>Significant result obtained with the dose of one cup fresh leaves extract mixed with cold milk taken once in the morning for enhancement of male fertility, and continued for 1 month.</td>
</tr>
<tr>
<td>31.</td>
<td><em>Santalum album</em> L.</td>
<td>Swetchandan</td>
<td>Santalaceae</td>
<td>Bark</td>
<td>2 teaspoonful of bark crushed and mixed with water taken two teaspoonful twice in a day for the treatment of diabetes and tuberculosis and continued for 3 months.</td>
</tr>
<tr>
<td>32.</td>
<td><em>Hemidesmus indicus</em> (L.) R.Br.</td>
<td>Anantamul</td>
<td>Asclepiadaceae</td>
<td>Whole plant</td>
<td>Decoction of whole plant used in dyspepsia, fever and paste of leaves used in skin diseases. Applied for 7-10 days on skin.</td>
</tr>
<tr>
<td>33.</td>
<td><em>Boerhavia difussa</em> L.</td>
<td>Purnanava</td>
<td>Nyctaginaceae</td>
<td>Leaves</td>
<td>2 teaspoonful of leaves extract taken twice daily for the remedy of diabetes.</td>
</tr>
<tr>
<td>34.</td>
<td><em>Mangifera indica</em> L.</td>
<td>Aam</td>
<td>Anacardiaceae</td>
<td>Fruits, leaves</td>
<td>Leaves and fruits extract used in diabetes. 5-6 teaspoonful of leaves extract used in diabetes, continued for 1 month taken 2 times daily.</td>
</tr>
<tr>
<td>35.</td>
<td><em>Abras precatorius</em> L.</td>
<td>Kuch</td>
<td>Fabaceae</td>
<td>Fruits</td>
<td>½ cup extract of fresh fruits taken for the treatment of jaundice, continued for 15 days.</td>
</tr>
<tr>
<td>36.</td>
<td><em>Coccinia grandis</em> (L./Voigt</td>
<td>Telakuch</td>
<td>Cucurbitaceae</td>
<td>Leaves</td>
<td>½ cup of leaves extract used for the treatment of diabetes.</td>
</tr>
<tr>
<td>37.</td>
<td><em>Piper betle</em> L.</td>
<td>Pan</td>
<td>Piperaceae</td>
<td>Leaves</td>
<td>2 to 3 teaspoonful of leaves extract is used as antifertility agent of female, continued for 15 days, once in every morning.</td>
</tr>
<tr>
<td>38.</td>
<td><em>Tinospora cordifolia</em> (Willd.) Miers ex Hook.f.&amp; Thoms.</td>
<td>Gulancha</td>
<td>Menispermaceae</td>
<td>Leaves</td>
<td>4 teaspoonful of bark dust mixed with water taken for Tuberculosis, burning sensation during urination, continued twice daily for 1-3 month.</td>
</tr>
<tr>
<td>39.</td>
<td><em>Abroma augusta</em> L.f.</td>
<td>Ulot kambal</td>
<td>Sterculiaceae</td>
<td>Leaves</td>
<td>2 teaspoonful of leaves extract mixed with water and taken two times daily for 1-2 month for the treatment of</td>
</tr>
<tr>
<td>No.</td>
<td>Scientific Name</td>
<td>Common Name</td>
<td>Family</td>
<td>Part Used</td>
<td>Uses</td>
</tr>
<tr>
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</tr>
<tr>
<td>40.</td>
<td><em>Heliotropium indicum</em> L.</td>
<td>Hatisur</td>
<td>Boraginaceae</td>
<td>Leaves and inflorescence</td>
<td>Leaves and inflorescence of the plant is applicable as remedy of indigestion and remedy of male infertility.</td>
</tr>
<tr>
<td>41.</td>
<td><em>Cuscuta reflexa</em> Roxb.</td>
<td>Sarnalata</td>
<td>Convolvulaceae</td>
<td>Whole plant</td>
<td>Extract of whole fresh plant used to prevent male fertility. 2 teaspoonful leaves extract used to prevent hyper tension, continued for 1 month, taken once in every morning.</td>
</tr>
<tr>
<td>42.</td>
<td><em>Coriandrum sativum</em> L.</td>
<td>Dhoney</td>
<td>Umbellifera</td>
<td>Seeds</td>
<td>½ teaspoonful dust of seeds used for the treatment of indigestion, continued for 7 days. 1 teaspoonful seeds dust mixed with water used for treatment of constipation, continued for 14 days twice daily.</td>
</tr>
<tr>
<td>43.</td>
<td><em>Trachyspermum ammi</em> (L.) Sprague</td>
<td>Jawan</td>
<td>Umbelliferae</td>
<td>Seeds</td>
<td>2-3 teaspoonful of seeds dust used in the treatment of indigestion continued for 15 days.</td>
</tr>
<tr>
<td>44.</td>
<td><em>Tamarindus indica</em> L.</td>
<td>Tentul</td>
<td>Caesalpiniaceae</td>
<td>Fruits, leaves</td>
<td>Extract of fruits and leaves mixed with mouri and michri and taken for the treatment of high blood pressure, continued for 21 days once in every morning in empty stomach.</td>
</tr>
<tr>
<td>45.</td>
<td><em>Saraca asoca</em> (Roxb.) de Wilde.</td>
<td>Ashoke</td>
<td>Caesalpiniaceae</td>
<td>Leaves and bark</td>
<td>Paste of leaves and bark, 2 teaspoonful mixed with water taken twice daily continued for 2 month, for the treatment of irregular menstruation, and in uterine disorder.</td>
</tr>
<tr>
<td>46.</td>
<td><em>Clitoria ternatea</em> L.</td>
<td>Aparajita</td>
<td>Papilionaceae</td>
<td>Whole plant</td>
<td>1 teaspoonful of whole plant extract used for the treatment of diabetes, continued for a week, once in every morning.</td>
</tr>
<tr>
<td>47.</td>
<td><em>Piper longum</em> L.</td>
<td>Pipli</td>
<td>Piperaceae</td>
<td>Fruits, leaves</td>
<td>½ teaspoonful paste of leaves and fruits mixed with ginger, black pepper and saffron is taken for 1-2 month for the treatment of nerve weakness, convulsion and rheumatism.</td>
</tr>
<tr>
<td></td>
<td>Plant Name</td>
<td>Genus</td>
<td>Family</td>
<td>Part Used</td>
<td>Uses</td>
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</tr>
<tr>
<td>48.</td>
<td><em>Ananas comosus</em> (L.) Merr.</td>
<td>Anaras</td>
<td>Bromeliaceae</td>
<td>Fruit and leaves</td>
<td>Juice of leaves and fruits used in gastric irritability, jaundice, taken for two weeks, 2 teaspoonful daily.</td>
</tr>
<tr>
<td>49.</td>
<td><em>Pandanus foetidus</em> Roxb.</td>
<td>Keya</td>
<td>Pandanaceae</td>
<td>Bark</td>
<td>½ cup bark extract of the plant taken for the treatment of high blood pressure, continued for 7 days.</td>
</tr>
<tr>
<td>50.</td>
<td><em>Asparagus racemosus</em> Willd.</td>
<td>Shatamuli</td>
<td>Asparagaceae</td>
<td>Whole plant</td>
<td>3 teaspoonful of whole plant extract leaf extract used in indigestion and in high blood pressure, continued for 7 days, once in empty stomach daily.</td>
</tr>
<tr>
<td>51.</td>
<td><em>Datura metel</em> L.</td>
<td>Dhutura</td>
<td>Solanaceae</td>
<td>Fruits, seeds</td>
<td>1 teaspoonful leaves and roots paste mixed with water and used in the treatment of asthma, continued for 14 days.</td>
</tr>
<tr>
<td>52.</td>
<td><em>Adhatoda vasica</em> Ness</td>
<td>Vasak</td>
<td>Acanthaceae</td>
<td>Leaves and roots</td>
<td>½ cup extract of leaves and roots mixed with 1 teaspoonful honey used in the treatment of cough, cold, chronic bronchitis, continued for 2-4 days.</td>
</tr>
<tr>
<td>53.</td>
<td><em>Holarrhena pubescens</em> (Buch.-Ham.) Wall.ex G.Don</td>
<td>Kurchi (Easter tree)</td>
<td>Apocynaceae</td>
<td>Leaves, bark seeds and stem</td>
<td>Powder of plant parts mixed with water used in treatment of dysentery and in diarrhoea. 1 teaspoonful powder taken for 1 week once in regular empty stomach.</td>
</tr>
<tr>
<td>55.</td>
<td><em>Andrographis paniculata</em> (Burm.f.) Wall.ex Nees</td>
<td>Kalamegh</td>
<td>Acanthaceae</td>
<td>Leaves and roots</td>
<td>Paste of fresh leaves used for the treatment of round worm, extract of leaves and roots used in the treatment of stomachache, dose continued for 7 days.</td>
</tr>
<tr>
<td>57.</td>
<td><em>Piper nigrum</em> L.</td>
<td>Gol marich</td>
<td>Piperaceae</td>
<td>Seeds</td>
<td>Seeds dust mixed with water used in the treatment of cough and cold, taken 3-4 teaspoonful thrice daily for 7 days.</td>
</tr>
<tr>
<td>No.</td>
<td>Plant Name</td>
<td>Part Used</td>
<td>Family</td>
<td>Part Used</td>
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<tr>
<td>58.</td>
<td><em>Brassica nigra</em> (L.) G. Koch</td>
<td>Sarisha</td>
<td>Cruciferae</td>
<td>Seeds</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Seeds oil warm with garlic and massage on muscle and joint for cure joint pain.</td>
<td></td>
</tr>
<tr>
<td>59.</td>
<td><em>Centella asiatica</em> (L.) Urban</td>
<td>Thankuni</td>
<td>Umbelliferae</td>
<td>Leaves</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Juice of 5-6 leaves taken every morning for the treatment of dysentery, continued for 1 month.</td>
<td></td>
</tr>
<tr>
<td>60.</td>
<td><em>Cannabis sativa</em> L.</td>
<td>Ganja</td>
<td>Cannabinaceae</td>
<td>Leaves</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Leaves juice 2-3 teaspoonful with water used as nervine tonic continued for 2 weeks.</td>
<td></td>
</tr>
<tr>
<td>61.</td>
<td><em>Feronia limonia</em> (L.) Swingle</td>
<td>Katbel</td>
<td>Rutaceae</td>
<td>Fruits</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Pulp of fruits used for the treatment of diabetes. 2 teaspoonful of fruits pulp taken twice, continued for 10 days.</td>
<td></td>
</tr>
<tr>
<td>62.</td>
<td><em>Alstonia scholar</em> (L.) R.Br</td>
<td>Chhatim</td>
<td>Apocynaceae</td>
<td>Leaves</td>
<td></td>
</tr>
<tr>
<td></td>
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<td></td>
<td></td>
<td>Leaves decoction enhance male fertility. one teaspoonful decoction taken for 1 month, once daily.</td>
<td></td>
</tr>
<tr>
<td>63.</td>
<td><em>Pandanas odoratissimus</em> L.f</td>
<td>Kukur kata/Keorka</td>
<td>Pandanaceae</td>
<td>Leaves</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2 teaspoonful leaves extract mixed with water used for diabetes, taken for one month once in daily in the morning.</td>
<td></td>
</tr>
<tr>
<td>64.</td>
<td><em>Acacia nilotica</em> (L.) Willd. exindica (Benth.)Brenan</td>
<td>Babul</td>
<td>Mimosaceae</td>
<td>Gum</td>
<td></td>
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<tr>
<td></td>
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<td></td>
<td>Gum mixed with honey used in diabetes continued for 2 weeks, twice daily.</td>
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<td></td>
<td></td>
<td>2 teaspoonful fruits pulp used in diabetes continued for two weeks, once in every morning.</td>
<td></td>
</tr>
<tr>
<td>66.</td>
<td><em>Allium cepa</em> L.</td>
<td>Piyaz</td>
<td>Ailliaceae</td>
<td>Bulbs</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>½ cup juice of bulbs used in diabetes, continued for one month.1/2 cup bulbs juice used in the treatment of hypertension, continued for 14 days, once in every morning.</td>
<td></td>
</tr>
<tr>
<td>67.</td>
<td><em>Borassus flabellifer</em> L.</td>
<td>Tal</td>
<td>Arecaceae</td>
<td>Roots</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2 cup roots extract used in diabetes continued in daily morning for 45 days.</td>
<td></td>
</tr>
<tr>
<td>68.</td>
<td><em>Butea monosperma</em></td>
<td>Palas</td>
<td>Papillionaceae</td>
<td>Stems</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1 cup extract of stems</td>
<td></td>
</tr>
<tr>
<td>No.</td>
<td>Species</td>
<td>Common Name</td>
<td>Family</td>
<td>Part Used</td>
<td>Description</td>
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</tr>
<tr>
<td>69.</td>
<td><em>Catharanthus roseus</em> (L.) G.Don</td>
<td>Sada nayantara</td>
<td>Apocynaceae</td>
<td>Leaves</td>
<td>1/2 cup leaves extract used in diabetes, continued for 15-20 days every morning.</td>
</tr>
<tr>
<td>70.</td>
<td><em>Cassia occidentalis</em> L.</td>
<td>Kalkasunda</td>
<td>Caesalpiniaceae</td>
<td>Flowers</td>
<td>1 teaspoonful flowers extract used in diabetes, taken for 15 days.</td>
</tr>
<tr>
<td>71.</td>
<td><em>Emblica officinalis</em> Gaertn</td>
<td>Amloki</td>
<td>Euphorbiaceae</td>
<td>Seeds, fruits</td>
<td>Dried fruits are used in indigestion, taken 2-3 piece for 14 days. 4 teaspoonful fruit juice used in diabetes, continued for 2 week twice regularly.</td>
</tr>
<tr>
<td>72.</td>
<td><em>Ficus benghalensis</em> L.</td>
<td>Bat</td>
<td>Moraceae</td>
<td>Bark</td>
<td>Bark extract of the plant is useful for diabetes. 2 teaspoonful extract for 7 days twice daily is good for diabetes.</td>
</tr>
<tr>
<td>73.</td>
<td><em>Gossypium herbaceum</em> L.</td>
<td>Kapas</td>
<td>Malvaceae</td>
<td>Seeds</td>
<td>Seeds powder mixed with water. 2 teaspoonful paste used in the treatment of diabetes. continued for 2 month.</td>
</tr>
<tr>
<td>74.</td>
<td><em>Hygrophila schulli</em> (Buch.-Ham.)</td>
<td>Kulekhara</td>
<td>Acanthaceae</td>
<td>Leaves</td>
<td>Leaves extract of the plant used in the treatment of diabetes. 2 cup extract taken for 14 days, once in every morning. 1/2 cup plant extract with water is taken for one month once daily, for increasing haemoglobin.</td>
</tr>
<tr>
<td>75.</td>
<td><em>Momordica charantia</em> L.</td>
<td>Karela</td>
<td>Cucurbitaceae</td>
<td>Fruits</td>
<td>A cup of boiled fruits juice of the plant used in diabetes for 3 weeks.</td>
</tr>
<tr>
<td>77.</td>
<td><em>Musa paradisiaca</em> L.</td>
<td>Kala</td>
<td>Musaceae</td>
<td>Flowers, stems</td>
<td>2 cup flowers and stem juice used in treatment of diabetes, continued for 7 days</td>
</tr>
<tr>
<td>78.</td>
<td><em>Calotropis gigantea</em> Linn.</td>
<td>Akanda</td>
<td>Asclepiadaceae</td>
<td>Leaves, flowers</td>
<td>Two teaspoon full leaves extract applied orally as nerve tonic. also applied in diabetes, diarrhoea.</td>
</tr>
<tr>
<td></td>
<td><strong>Marsilea quadrifoliata</strong> L.</td>
<td>Marsileaceae</td>
<td>Seeds, flowers</td>
<td>Dust of leaves with water two teaspoon full daily is effective for the treatment of anti fertility for female.</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>81</td>
<td><strong>Vitex negundo</strong> L.</td>
<td><strong>Verbenaceae</strong></td>
<td>Leaves</td>
<td>Prescribed for leukemia, help to increase insemination, increase sexual desire, act as nervine tonic,</td>
<td></td>
</tr>
</tbody>
</table>
Fig:11. Graphical representation of the plant parts used in the treatment of various diseases by the tribal medicine-men of the District: Cooch Behar, West Bengal, India.
Fig12: Graphical representation of number of plants used in controlling various diseases by the tribal medicine-men of the District: Cooch Behar, West Bengal, India.
Report of Tribal medicinemen of the District Cooch Behar for anti-stress purposes

Report: 1

He is a Rajbanshi medicineman who cures several diseases through herbal ways. He usually treats fever, different types of pain, jaundice and nervine problems. He practiced the medicinanship for about 20 years. He successfully used the following herbal medicine for anxiety and related purposes.

Used plants:

*Centella asiatica* (L.) Urban (Umbelliferae) ‘Thankuni’
*Vitex negundo* L. (Lamiaceae) ‘Nishindha’

Talan:
Piper nigrum L. (Piperaceae) ‘Golmorich’
Ghee
Honey

Preparation and application:
Leaves of Nishindha and Thankuni are ground with golmorich and form pills. 4 pills are to be taken everyday in empty stomach for two weeks.

Results:
It prevents anxiety and it has no side effects.

Report: 2

The following combination was provided by a 60 years old medicine man practiced over 40 years. He treats to cure diabetis, nerve and sexual diseases also. He successfully used herbal medicine.

Used plants:

*Withania somnifera* (L.) Dunal (Solanaceae), Aswagandha
*Calotropis gigantea* Linn. (Asclepiadaceae), Akanda

Talan:
Piper nigrum L. (Piperaceae) ‘Golmorich’
*Laurus cinamonum* Wild. ‘Darchini’

Common salt
Preparation and application:
Aswagandha dry roots and leaves are ground with golmorich and form pills. 4-6 pills are to be taken everyday after dinner for two weeks.
Fresh leaves of Akanda are ground and mixed with common salt for the preparation of paste. 1 teaspoon full paste is taken for 1 month after dinner.

Results
It prevents anxiety and it has no side effects. It is very useful for sound sleep and it also act as pain reliever.

Report: 3
The following combination was provided by a 60 years old medicine man practiced over 40 years. He treats to cure diabetis, nervine and sexual diseases also. He successfully used herbal medicine.

Used plants
Aloe vera (L.) Wild. (Liliaceae)
Cannabis sativa L. (Cannabinaceae)

Talan
Rasasindur
Sona pata
Common salt

Preparation and application
Leaves of Ghritakumari and Akanda are separately ground with rasasindur, sona pata and common salt form pest. 2 teaspoon full pest are to be taken everyday after dinner for two weeks.

Results
It prevents anxiety and it has no side effects. It is very useful for sound sleep.

Report: 4
The following ethnomedicinal information was reported by the Ojha (medicine man) Rajbangshi tribal people of 62 years. He was trained from his guru. He treats for epilepsy, Alzheimer, body pain etc.
Used plants

*Bacopa monniera* (L.) Penn. (Scrophulariaceae) (Brahmi).

Talan

Ghee

**Preparation and application:**
Brahmi leaves ground to form pest then mixed with ghee. This mixture should be taken one teaspoon full daily for 15 days.

**Results**
It prevents anxiety, epilepsy, Alzheimer and it has no side effects. It is very useful for sound sleep.

**Report: 5**
The following indigenous medicinal information was provided by tribal medicine man 55 years age. He is engaged as a medicine man for 20 years. His grandfather and father was also medicine man. He treats for diabetes, jaundice, sexual diseases and also treats neuronal patients.

Used plants:

*Cannabis sativa* L. (Cannabinaceae), Gaja

*Aloe vera* (L.) Wild (Liliaceae), Ghritakumari

*Withania somnifera* (L.) Dunal (Solanaceae), Ashwagandha

Talan:

Mkaradhwaj (Kabiraji ingredients)

Sona pata (Kabiraji ingredients)

Korpur

**Preparation and application:**
Leaves of plants are ground separately and mixed with talans for the preparation of pills. 4 pills are taken for 14 days before sleep.

**Result:**
In case of Insomnia, anxiety, loss of memory pills are helpful.
**Report 6:**

**Used plants:**

*Datura stramonium* L., Solanaceae, Dhutura (kala).

*Ocimum sanctum* L., (Labiatae) (Tulsi).

*Withania somnifera* (L.) *Dunal* (Solanaceae), Ashwagandha

**Talan:**

Honey

Sada jeera

**Preparation and application:**

Leaves of Dhutura are ground and talans are mixed for preparation of pills. Honey mixed with pest of tulsi leaves and pills are made. Ashwagandha leaves and roots are dried and ground for the preparation of powder. 4 Pills of Dhutura and Tulsi are taken for 21 days regularly at morning. Powder of Aswagandha (2 tea spoon full) mixed with 1 cup of water and taken for 14 days at morning in empty stomach.

**Result:** This combination is a long term effective oral herbal medicine
Plants used by the tribal people of Cooch Behar district for lowering stress related problems

The medicine men within District Coochbehar, West Bengal use various types of medicines for the control of nervous breakdown, depression, memory loss, insomnia and in anxiety. The medicines are prepared from leaves, stems, roots of various types of plants, and other ingredients. The plant species used by medicine men have been arranged by botanical names, followed by families, tribal or other local names, a brief botanical description, pharmacopeia and distribution.

1. Aloe vera (L.) Wild. (Liliaceae)

Tribal name: Ghrita kumari

Common name: Aloe, Indian Alces, Kumari, Ghirita.

Distribution: It is thorny, xerophytic, succulent herb which is found extensively all over India.

Description

Aloe vera is a stemless or very short-stemmed succulent plant growing to 60–100 cm (24–39 in) tall, spreading by offsets. The leaves are thick and fleshy, green to grey-green, with some varieties showing white flecks on their upper and lower stem surfaces. The margin of the leaf is serrated and has small white teeth. The flowers are produced in summer on a spike up to 90 cm (35 in) tall, each flower being pendulous, with a yellow tubular corolla 2–3 cm (0.8–1.2 in) long.

Chemical constituents

Aloe vera has a high enzyme content (about 92 enzymes) which makes it rare and valuable resource. Aloe vera contains mostly water (90-99.5%). Other potentially active constituents of Aloe vera include sugars, lignin, saponins, anthraquinones, salicylic acid and amino acids (Atherton, 1998). Reynolds and Dweck, (1999) listed 16 different polysaccharides that have been extracted from the Aloe vera leaf. A variety of minerals like aluminium, boron, barium, calcium, iron, magnesium, sodium, phosphorus, silicon and strontium has been detected in Aloe gel (Yamaguchi et al., 1993). The Aloe vera leaf contains over 75 nutrients and 200 active compounds including 20 minerals, 18 amino acids and 12 vitamins (Park et al., 2006). It contains all of the eight essential amino acids and 11 of the 14 secondary amino acids.
2. *Bacopa monniera* (L.) *Penn.* (Scrophulariaceae)

**Tribal name:** Choto manimuni

**Common name:** Brahmi, Water Hyssop

**Description:** A small, creeping, glabrosa, succulent herb, rooting at nodes. Stem soft obtuse-angular, branches ascending; leaves short petiolate, oblong to ovate, flowers solitary axillary, blue or white in colour with purple veins, capsules ovoid.

It is somewhat succulent, creeping herb, rooting at the nodes, with numerous prostrate branches, each 10-30 cm long; Leaves oblong to spatulate, sessile, decussate, rather fleshy, entire, punctuate, obtuse; Flowers axillary, solitary, peduncles often much longer and deflexed in fruiting stage; Corolla about one cm long, pale, lobes 5, oblong, obtuse, sub equal, tips purple; Capsule ovoid-acuminate or slightly beaked at the apex; Seeds oblong, truncate, longitudinally ribbed with transverse striations in between the ribs.

**Distribution:**

Tropics and subtropics of the world

**Chemical constituents:**
The chemical constituents of the plant *Bacopa monniera* indicated the presence of alkaloids, Brahmine, and herpestine. The major bioactive constituent of the plant are tetra cyclic triterpenoid saponins, bacosides A and B (crystalline mixture of several saponins). Among these Bacoside A is
predominant. Other saponins include bacoside A1, bacoside A3, bacopasaponins A, B, C, D, E, & F. The other minor compounds include alkaloids viz., herpestine and Brahmin; flavonoids viz., luteolin-7-glucoside, glucoronyl-7-apigenin and glucortonyl -7-luteolin; common phytosterols (Rastogi and Maharota, 1993; Jyoti et al., 2012).

![An entire Brahmi plant](Bacopa_monniera_(L.)_Penn.)

**3. Centella asiatica** (L.) Urban, (Apaceae)

Tribal name: Baro manimuni, Thankuni

Common name: Thankuni, Asiatic pennywort or Indian pennywort in English, Guta kola or Gotu kola (Indian).

**Description:** *Centella asiatica* grows in tropical swampy areas. The stems are slender, creeping, green to reddish-green in colour, connecting plants to each other. It has 1 green, rounded apices which have smooth texture. The leaves are borne on pericardial petioles, around 2 cm. The rootstock consists of rhizomes, growing vertically down. They are creamies in colour and covered with root hairs.

The flowers are white or pinkish to red in colour, born in small, rounded bunches (umbels) near the surface of the soil. Each flower is partly enclosed in two green bracts. The hermaphrodite flowers are minute in size (less than 3 mm), with 5-6 corolla lobes per flower. The fruits are densely reticulate.

**Distribution:**

South-east Asia and extending up to sub tropical regions.

**Chemical constituents:**

Active principles are pentacyclic tirterpenes, namely, asiatic acid, asiaticoside, madecassic acid and madecassoside. Triterpenes with healing potential were isolated, namely, terminolic acid,
asiaticoside-B while sceffoleoside A and saponins (centellasaponins B,C and D) with four ursane- and oleanane-type triterpene oligoglycosides were isolated from *Centella asiatica* grown in Sri Lanka. Other minor saponins are centelloside, brahmoside and brahminoside. The essential oil from *Centella asiatica* grown in South Africa, contains 11 monoterpenoid hydrocarbons (20.2%), 9 oxygenated monoterpenoids (5.46%), 14 sesquiterpenoid hydrocarbons (68.8%), 5 oxygenated sesquiterpenoid (3.9%) and 1 sulphide sesquiterpenoid (0.76%). The predominant constituents were b-caryophyllene (19.08%), bicyclogermacrene (11.22%), germacrene B (6.29%) and myrcene (6.55%). Other reports included trans-b-farnesene and germacrene D as prominent constituents of the essential oil (Wollina et al., 2006).

![An entire Thankuni plant](image)

**Fig:15. An entire Thankuni plant (Centella asiatica (L.)Urban.)**

4. *Calotropis gigantea* Linn. (Asclepiadacea)

**Tribal name:** Akanda, Arka

**Common name:** Muder, Akanda

**Description:** South-east Asia and extending up to sub tropic regions.

Shrub or small tree with a rough corky bark. Stems producing copious latex when broken. Leaves are sessile, broad. Leaves opposite, grey-green, large up to 15 cm long and 10 cm broad, with a pointed tip, two rounded basal lobes and no leaf stalk; . Flowers purplish pink. Fruits are inflated. Seeds with a pappus of silky hairs. Flowers waxy white, 5 petals, purple-tipped inside and with a
central purplish crown, carried in stalked clusters at the ends of the branches; fruit greygreen, inflated, 8 to 12 cm long, containing numerous seeds with tufts of long silky hairs at one end. (Kleinschmidt and Johnson, 1977).

**Distribution:** Tropical and sub tropical regions.

**Chemical constituents:**
The latex contains caoutchouc, calotropin, calotoxin 0.15%, calactin 0.15%, Uscharin 0.45%, trypsin, voruscharin, uzarigenin, syriogenin and procercoside. The flower contains the flavonoids, queretin-3-ratioside, sterol, calactin, calotoxin, calotropagenin, calotropin, polysaccharides with D-arabinose, glucose, glucosamine and L-rhamnose. Flowers also contain enzymes 3-proteinase and calotropain(protease). Other chemical constituents of *C. gigantea* flowers are lupeol, uscharin, procercoside, procercosgenin, syriogenigigantin, giganteol, isogiganteol, uscharidin, uzarigeninvoruscharin a-calotropeol, 3-epimoretenol, alactuceryl acetate an a-lactuceryl isovalerate. (Akhtar and Malik, 1998; Ansari and Ali, 2001)

![An entire Akanda plant](image)

**Fig:** 16. An entire Akanda plant (*Calotropis gigantea* Linn.)

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5. **Cannabis sativa** L. (Cannabaceae)

**Tribal name:** Ganja

**Common name:** Ganja

**Distribution:** Tropical region

**Description:**
*Cannabis sativa* is an annual, dioecious, flowering herb. The leaves are palmately compound or digitate, with serrate leaflets. The first pair of leaves usually have a single leaflet, the number
gradually increasing up to a maximum of about thirteen leaflets per leaf, depending on variety and growing conditions. *Cannabis* normally has imperfect flowers, with staminate "male" and pistillate "female" flowers occurring on separate plants. It is not unusual, however, for individual plants to bear both male and female flowers. Although monoecious plants are often referred to as "hermaphrodites," true hermaphrodites (which are less common) bear individual flowers, whereas monoecious plants bear male and female flowers at different locations on the same plant.

**Chemical constituents:**
Cannabis chemical constituents include about 100 compounds responsible for its characteristic aroma. These are mainly volatile terpenes and sesquiterpenes. Tetrahydrocannabinol (THC), Cannabidiol (CBD), α-Pinene, Myrcene, Linalool, Limonene, Trans-β-ocimene, α-Terpinolene, Trans-caryophyllene, α-Humulene, contributes to the characteristic aroma of *Cannabis sativa* (Novak J, et.al., 2001).

![An entire Ganja plant](image)

**Fig: 17. An entire Ganja plant (Cannabis sativa L.)**

6. *Datura metel* L. (Solanaceae)

**Tribal name:** Dhutura,

**Common name:** Dhatura, Indian Thorn Apple

**Distribution:** Tropical and subtropical region.

**Description:**
Datura metel is an annual, ash-green, hairy species 0.40-1 m. high. Its leaves are simple, uncut or sometimes with slightly indented sinuate margins. The flowers are strongly scented, with short peduncles, erect and big (15-20 cm.). The corolla is twice as long as the calyx. The fruit is a
globular pendulous capsule, with little thorns that are not dilated at the base. Flowering occurs from August to September of every year.

**Chemical constituents:**

The leaves contain about 0.5% of alkaloids, the main one being scopolamine accompanied with little norscopolamine, hyoscyamine and meteloidine. A new tropanic alkaloid, datumetine, was isolated on the leaves. These are also rich in withanolides (steroidal elements: datumeteline, daturibine, etc.) The seeds contain 0.2-0.5% of alkaloids and the roots 0.1-0.2%. The flowers particularly contain scopolamine (0.26%) and hyoscyamine.

![An entire Dhutura plant](image)

**Fig: 18. An entire Dhutura plant** (*Datura stromonium* L.)

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7. **Ocimum sanctum** L. (Labiateae)

**Tribal name:** Tulsi,

**Common name:** Tulsi

**Distribution:** It comes from India originally and become a cosmopolitan. Found in Spain, France, Italy and tropical Africa.

**Description:** A much-branched aromatic herb, woody at the base, 30-60 cm high; branches subquadrangular. Leaves 2.5-5 cm long, elliptic-oblimg, obtuse or acute, entire or serrate, pubescent on both sides. Flowers in racemes, 15-20 cm long in close whorls, corolla 4 mm long, purplish. Nutlets 1.25 mm long, broadly ellipsoid, yellow with small black markings.
**Chemical constituents:**

The plant contains alkaloids, glycosides, flavonoids, triterpene, saponins and citric, tartaric, ursolic and malic acids. Seeds contain a fixed oil composed of palmitic, stearic, linolenic, linoleic and oleic acids. Stigmasterol, β-sitosterol, and triacontanol ferulate have been isolated from stem bark. Leaves yield a bright yellow essential oil containing methyl eugenol, isoeugenol, eugenol acetate, β-elemene, α-guaine, carvacrol, cineol, linalool, phenols (Ghani, 2003). Ursolic acid, Apigenin, Luteolin, Apigenin-7-O-glucuronide, Luteolin-7-O-glucuronide, Isorientin, Orientin, Molludistin, Stigmasterol, Triacontanol ferulate, Vicenin-2, Vitexin, Isovitexin, Aesculetin, Aesculin, Chlorgenic acid, Galuteolin, Circineol, Gallic acid, gallic acid methyl ester, Procatechue acid, Vallinin acid, 4-hydroxybenzoic acid, Caffiec acid, Chlorogenic acid, Phenylpropane glucosides, β-Stigmasterol, urosolic acid. Palmitric acid, Stearic acid, Linolenic acid, Oleic acid, Sitosterol, Dillinoleno-linolins, Linodilinolin, Hexourenic acid.

![An entire Tulsi plant](image)

**Fig: 19. An entire Tulsi plant (Ocimum sanctum L.)**

8. *Vitex negundo* L. (Verbenaceae)

   **Tribal name:** Nishindha, Narashim
   **Common name:** Ashok
   
   Bengal - Nirgundi, Nishinda
   English - Five leaved chaste tree

**Distribution:**
River banks, moist localities and in the deciduous forests.

**Description:**

*Vitex negundo* is an erect shrub or small tree growing from 2 to 8 m (6.6 to 26.2 ft) in height. The bark is reddish-brown. Its leaves are digitate, with five lanceolate leaflets, sometimes three. Each leaflet is around 4 to 10 cm in length, with the central leaflet being the largest and possessing a
stalk. The leaf edges are toothed or serrated and the bottom surface is covered with hair. The numerous flowers are white to blue in colour. The petals are of different lengths, with the middle lower lobe being the longest. Both the corolla and calyx are covered in dense hairs.

The fruit is a succulent drupe, rounded to egg-shaped. It is black or purple when ripe.

**Chemical constituents:**

reported isolation of Terpinen-4-ol, $\alpha$-terpineol, sabenine, globulol, spathulenol, $\beta$- farnesene, farnesol, bis (1,1dimethyl) methylphenol, $\alpha$-pinene, $\beta$-pinene, linalool, terpinyl acetate, caryophyllene epoxide, caryophyllenol along with viridifloro isolation first reported by (Singh and pandey, 2004). (Singh et al., 2010) proved the presence of volatile oil which contains ten volatile components like $\alpha$-copaene, $\beta$-caryophyllene, $\beta$-elemene, camphene, $\alpha$-thujene, $\alpha$-pinene, sebinene, linalool, stearic acid.

![Fig: 20. An entire Nishindha plant (Vitex negundo L.)](image)

9. *Withania somnifera* (L.) Dunal (Solanaceae)

**Tribal name:** Ashwagandha

**Common name:**

Indian ginseng, poison gooseberry, or winter cherry, Ashwagandha (horse smell in sanaskrit)

**Description:** *Withania somnifera* is an evergreen, erect, branching, shrub, 30-150 cm in height.
Leaves are simple, ovate, glabrous, and up to 10 cm long. Flowers are greenish or lurid yellow, small about 1 cm long; few flowers (usually about 5) born together in axillary, umbellate cymes (short axillary clusters). Fruits are globose berries, 6 mm in diameter, orange red when mature, enclosed in the inflated and membranous persistent calyx. Seeds are yellow.

**Distribution:**

*Withania somnifera* is cultivated in many of the drier tropical and sub tropical regions.
**Chemical constituents:** The roots are reported to contain alkaloids, amino acids, steroids, volatile oil, starch, reducing sugars, glycosides. The total alkaloidal content of the Indian roots has been reported to vary between 0.13 and 0.31 percent, though much higher yields (up to 4.3%) have been recorded elsewhere (Anonymous, 1982; Anonymous, 2007).

The free amino acids identified in the root include aspartic acid, glycine, tyrosine, alanine, proline, tryptophan, glutamic acid, and cystine (Khare, 2004). The leaves of the plant (Indian chemotype) are reported to contain 12 withanolides, 5 unidentified alkaloids (yield, 0.09%), many free amino acids, chlorogenic acid, glycosides, glucose, condensed tannins, and flavonoids (Khare, 2007).

![An entire Ashwagandha plant Withania somnifera(L.) Dunal.](image)

**Fig:21.** An entire Ashwagandha plant *Withania somnifera*(L.) *Dunal.*

**Discussion**

The present study documents the significance of plant biodiversity in, West Bengal. This region is a repository of floral and faunal resources. Many plants in this region have potential in drug discovery and phytochemical analysis of these taxa can be conducted comprehensively to cure different ailments. The information generated from the present study will help in creating mass awareness regarding the need for conservation of such plants and also in the promotion of ethno-medicobotany knowledge within the region besides contributing to the preservation and enrichment of the gene bank of such economically important species before they are lost forever. The practices and methods employed for plant collections by the local herbalists are not scientific based and hence botanical collection techniques should be employed to aid protection and conservation of these medicinal resources. Thus there is a need for sustainable collection and propagation of the medicinal plants for future use. Traditional ecological knowledge is of significance from a conservation perspective and an attribute of societies with community in resource use practice (Gadgil et al.,1993). Over 50% of commercially available drugs are based on bioactive compounds extracted (or patterned) from plants. The extensive practice of traditional medicine in developing countries and the rapidly growing demand for alternative and basic therapeutic means (also in
industrialized countries) constitute the international relevancy of research and development in the field of traditional drugs (Labadie, 1986). There is thus a need for a trans disciplinary approach to integrate the various aspects of ethno-medicine in such a way that frameworks or methods to amalgamate ecological and social components of this practice. In this context, it is important not only to document the traditional uses of plants, but also to integrate the cultural and biological aspects of such practices into a broader discourse encompassing conservation, co-operative management and sustainability.

Hunting and food gathering are the common practices of these tribal communities. Most of are dependent on forest and forest products. Their cultural festivals are based on tree worship.

A number of modern drugs have become ineffective because of development of resistant strains of bacteria, fungus or parasites. A further group of allopathic drugs addresses either the symptoms of the disease without curing the disease or have serious side-effects. As a result scientific interest is re-focusing on indigenous use of medicinal plants, for experience has shown that scientific studies based on indigenous uses can be an effective way towards rapid discovery of some compounds with therapeutic potential. It is found from the result that the use of a number of medicinal plants have been validated by scientific studies be conducted on the plants for which such studies are absent.

Scientific studies need to be conducted along with serious efforts for conservation of medicinal plants. Coochbehar is a district with high population density. The forests are fast depleting due to human activities, the traditional resources like medicinal plants are also rapidly becoming endangered. More concerted effort needs to be made to conserve and cultivate medicinal plant species and to conduct scientific studies on such plants, it may represent the most promising source of discovery of important compounds and development of newer drugs.

The forest produces different parts of plant species are exploited from nearby forest and are utilised by these tribal for medicine, food and to fulfil their daily requirements. They earn their livelihood by selling different forest products in local markets. With the increase of biotic pressure the area of natural forest is decreasing rapidly. This decrease in natural forest area is responsible for rapid change in cultural and socio-economic conditions of the primitive forest dwellers of this region. Usually tribal people stick to their own cultural and traditions. Ojha, kaviraj, healer and old people of the villages have a good knowledge of plants, which are useful to cure various types of diseases of stomach, skin, chest, urinogenital disorders etc. most of the tribal medicines are used with various products and other ingredients prevalent among the tribal communities. Their living in the forest might be the cause of their considerable dependence on ecology and forest products for remedies of various diseases. These plants are available in different areas of the District.
As the Rajbanshi are predominant tribes of the District Coochbehar, the kaviraj and medicine-men are quite enormous in number in comparison to other tribal communities, as the economic conditions of the tribal people of the District Coochbehar are miserable, so the medicine-men are not only dependent on this particular profession but also engaged themselves in cultivation or collection of forest products in order to earn their daily wages. Medicine-men of over 60 years of age are only associated with medicine practice. Some medicine-men, so called Ojha acts as sorcerer or exorcist. The tribal way of curing the diseases involved the condition of herbal medicine and invocations of the spirits. The knowledge of medicine-men transmits from one generation to another through proper training. Usually they inherit their knowledge from their father or preceptor (Guru) of their own tribal community.

Normally tribal people are very shy and they have a traditionally strong belief of their religious rites and own medicinal practices. Scarcity of hospital in nearby localities may be another factor keeping them away from modern medicines. More over tribal people of Coochbehar District, West Bengal prefer their traditional medicine for stress control purposes in comparison to the modern methods for stress control because

1. These tribal people think that modern sedatives may cause the failure of heart.
2. Herbal medicines are easily available from local natural resources.
3. It is economic on the basis of cost and time.
4. They use the herbal medicine due to scarcity of hospital.
5. Usually there is no side effect or risk of life.

From the 9 tribal prescriptions it is clearly revealed that tribal people of the District Coochbehar use roots, portion of some plants and other ingredients for the stress control purposes. Some variations have been noticed about the plants and method of application of the medicines. The medicines that have been reported so far are mainly roots and leaves.

Although some have used portion of other plants (eg. parts of stem, resins, leaves, flowers and seeds) and other ingredients to make pill for some definitive periods. No clear correlation can be made with other medicines used by other communities of the District. It may be assumed that there is a direct action of these medicines on endocrine glands. May be that action of these products is from the pituitary level or alteration of some hormones in the blood but the mechanism of action of hormone is not yet known.

During the field work, investigations revealed that though many of the tribals were aware of the modern methods of sedative, but they do not avoid their age old practices. Most herbalist do not recommends herbs for antistress, because of the potential unreliability. Herbal treatment may never
reach the level of nervine tonic as the modern nervine tonic and pills but it offers alternatives for those who just want to try in a different way. Very little is known about many of the herbs, or about long term side effects or safety concerns.

The ethnobotanical study of the District Cooch Behar of West Bengal was involved a total number of 81 plant species distributed in 80 genera and 45 families. These study deals with 81 herbal recipes for the treatment of various diseases. Most of the tribal medicines are used with various plant products and other ingredients (Talans). From these all recipes only 9 plant species use as anti depressant medicine plant parts are used in the form of pills, paste and extract. The stem bark and roots have abortifacient property (Pakrashi and Pakrashi ,1977). Total cholesterol levels of human significantly reduced by using root of Tulsi (Rai et al ., 1997).

Another study showed the beneficial effect of Tulsi on blood glucose levels is due to its antioxidant properties (Sethi , 2004).

Leaves, latex, flowers are also useful as medicine (Batta et al., 1970). *Centella asiatica* effects on blood pressure and heart rate of anaesthetized hypertensive rats. A flavonoid quercetin found in *Centella asiatica* was used as positive control in this study since it has been shown to promote relaxation of cardiovascular smooth muscle (antihypertensive effects) (Formica and Regelson, 1995).

*Centella asiatica* has acivity to modulate both endogenous and neurotoxicant induced oxidative impairment in the brain and may be effectively employed as neuroprotective adjuvant to lower stress in vivo (George, 2008).

In Alzheimer’s disease loss of cholinergic neuronal activity in the hippocampus is the primary feature. The animal study results, *Baccopa moniaria* appear to have antioxidant activity in the hippocampus, frontal cortex, and striatum (Enz et al.1993).

*Aloe vera* which may show the CNS depressant activity due to presence of Flavonoids (Hu et al., 2003; Mishra et al., 2011) , saponins (Kumar et al., 2007).

The possible mechanism of glucose-lowering activity of *Ocimum sanctum* L. in male mice first pointed out by (Gholap , 2004). The study suggested that *O. sanctum* L. decreases the serum concentration of both cortisol and glucose and also exhibited anti peroxidative effect. Therefore *Ocimum sanctum* L. may potentially regulate corticosteroid- induced diabetic mellitus.

Effect of latex from *Calotropis gigantea* in the green frog R hexadactyla showed a significant increase in cardiac output. Evidence suggests the prime action of latex on the cardiovascular system involves changes in the cation (Ca, Na) permeability, with consequent excitation of Ca channels in the heart muscle and an increase coronary flow. Therefore, dilatation property is likely responsible for the pharmacologic actions of the latex (Palejkar et al., 2012).
Oral administration of ashwagandha for five days suggested anxiety-relieving effects similar to those achieved by the anti-anxiety drug lorazepam and antidepressant effects similar to those of the prescription antidepressant drug imipramine (Bhattacharya et al., 2001).

For the anti-inflammatory and analgesic effects salicylic acid is the bioactive component found in the plant. Gibberellins and Auxins hormones are also found which help in wound healing and repair of the tissues. Flavonoids (Hu et al., 2003; Mishra et al., 2011), saponins (Kumar et al., 2007) are also present in Aloe vera which may show the CNS depressant activity.

Ashwagandha is reported to have anti-carcinogenic effects. Research on animal cell cultures has shown that the herb decreases the levels of the nuclear factor kappa B, suppresses the intercellular tumor necrosis factor, and potentiate apoptotic signalling in cancerous cell lines (Ichikawa and Takada, 2006). One of the most exciting of the possible uses of Ashwagandha is its capacity to fight cancers by reducing tumour size (Prakash, et al., 2002, Jayaprakasam and Zhang, 2003) investigate its use in treating various forms of cancer, the antitumor effects of Withania somnifera have been studied by researchers. In one study, the herb was evaluated for its anti-tumor effect in urethane-induced lung tumors in adult male mice (Singh et al., 1986).

Research has explored the capacity of Ashwagandha to ease the symptoms of arthritis and other inflammatory conditions. These studies have proven that the herb acts as an effective anti-inflammatory agent. Its naturally occurring steroidal content is much higher than that of hydrocortisone, a commonly-prescribed anti-inflammatory (Anbalangan and Sadique, 1981). The effectiveness of Ashwagandha in a variety of rheumatologic conditions may be due in part to its antiinflammatory properties. Rats given powdered root of Withania somnifera orally one hour before being given injections of an inflammatory agent over a three day period showed that Ashwagandha produced anti-inflammatory responses comparable to that of hydrocortisone sodium succinate (Begum and Sadique, 1988).

Total alkaloid extract (ashwagandholine, ) or Withania somnifera roots has been studied for its effects on the central nervous system (Malhotra et al., 1965)

Ashwagandha is also very effective for the purposes such as insomnia, neurasthenia, infertility, impotence, repeated miscarriage, paralysis, memory loss, multiple sclerosis, immune- dysfunction, carcinoma, rheumatism, arthritis (Malhotra et al., 1965). Leaves have been used internally for fever and haemorrhoids; externally for wounds, haemorrhoids, tumours, tuberculosis, anthrax pustules and in ophthalmitis (Kirtikar and Basu, 1993). Fruits are used externally in ringworm (Kirtikar and Basu, 1993).
Sharma et al., 2011). Stress, as a major cardiovascular risk factor leads activation of and hypothalamic pituitary adrenal (HPA) axis and causes oxidative stress. *Withania somnifera* possesses a potent anti-stressor effect and is reported that it also increases heart weight and glycogen in myocardium and liver indicating intensification of the anabolic process and enhances the duration of contractility as well as coagulation time (Dhuley, 1998; Dhuley, 2000).

Ashwagandha was tested for its anti-aging properties in a double-blind clinical trial. A group of 101 healthy males, 50-59 years old were given the herb at a dosage of 3 grams daily for one year. The subjects experienced significant improvement in hemoglobin, red blood cell count, hair melanin, and seated stature. Serum cholesterol decreased and nail calcium was preserved. Seventy percent of the research subjects reported improvement in sexual performance (Bone, 1986).

Ashwagandha has been evaluated in clinical studies with human subjects for its diuretic, hypoglycemic, and hypocholesterolemic effects (Andallu and Radhika, 2000). Six type 2 diabetes mellitus subjects and six mildly hypercholesterolemic subjects were treated with a powder extract of the herb for 30 days. A decrease in blood glucose comparable to that which would be caused by administration of a hypoglycemic drug was observed. Significant increases in urine sodium, urine volume, and decreases in serum cholesterol, triglycerides, and low-density lipoproteins were also seen.

All the medicinal uses of plants for anti-stress activity recorded in this study have been reported in some recent publications (Prabhat et al., 2011; Nimacsow et al., 2012).

Some of the tribal prescriptions recorded in this study consist of only one species and some others with a mixture of species and additives which provide ample opportunities to study them critically in relation to the stress control. The plant parts used by tribal peoples of Coochbehar District, West Bengal for stress control are very simple and commonly available at all localities. It is easy to procure and also easy to be administered and the investigation throws light on the popularity of indigenous system or medicine amongst the general public. The detailed recording of prescribed doses, administrations and relevant aspects of prescription can lead to the development of new or alternative drug to stress control through further investigation on phytochemistry, pharmacognosy, pharmacology, toxicity and clinical aspects.

In general the tribes show many similarities in regard to their medicine, but the actual agents employed differ with the tribes and localities, as well as with individual healers of the district. Magic, prayers, songs, exhortation, suggestion, ceremonies and certain specifics and mechanical processes are employed by the medicine-men or medicine – women; other specific remedies or procedures are proprietary, generally among a few old people in the tribe; while many vegetal remedies and simple manipulations are of common knowledge in a given locality.
As indigenous culture are closely maintained and used by the tribal and other forest dwellers throughout the Coochbehar District. Considering the fact that traditional knowledge can form the basis for development of new medicinal product. It was an urgent necessity to record all information about plants which are used as anti-stresses agent.

Generally the Rajbanshi tribes are the dominating group in a locality and are settled agriculturists cultivating the land in a wide range of ways. They still use plant products for their treatment. Tribal communities particularly the medicine-men of the district have vast knowledge about the medicinal plants which are used for medicinal purpose.

Lastly, it is easier to conclude that there is a tremendous scope for the collection of folklore about medicine, stress control and other treatments from the tribal people of the District Cooch Behar. Such a project requires proper understanding between the survey team and local people, tactful behaviour and a significant amount of time.

From the personal observations and interview report it was observed that the knowledge of medicinal plants is still taught orally, with no written record.

The data presented here are based on the personal observations and interview reports with informants like ojha (medicinemen) and herbalist or local people of the tribal community. People in many countries are now more prepared to look for alternative approaches to maintain their health. Demands for traditional medicine from the public and the growing economic importance of traditional medicine have led to increased interest on the part of governments, academic communities and healer practitioners. Tribal medicine approach is holistic with a blending of physical, mental, social and spiritual well being. Its use is global. The methods practiced by the tribes in many cases are found to be positive, beneficial and scientifically sound.

Use of local medicinal plants by Tribal Rajbanshi ensures the continuity of indigenous knowledge associated with the species and has the definite bearing on the identification of their habitats, which are confined in the pockets of the most difficult hill terrain to some extent. The gradual decline in traditional use practices may, therefore, leads to the fading away of the indigenous knowledge associated with the plants in very near future. The places which are not approachable properly by roads, still found to be almost fully dependent on herbal health care system. The present study indicates that the area is a rich reservoir of medicinal plants and associated ethno medicinal practices offering great pharmaceutical potential. The knowledge for identification of medicinal plants, drug preparation and usage for medicines, as great potential amongst Rajbanshi tribes of Cooch Behar is confined to few old traditional practitioners chiefly. For their getting migrated to cities in search of better livelihood options further weaken the interest of young generations in
carrying noble traditions. This tendency of disinterestedness in old traditions is feared by old
generation as a major cause of loosing this wealth of knowledge in coming time soon. Therefore, it
is an appropriate time to document systematically traditional ethnomedicinal practices for
conservation.

Introducing techniques of ex-situ cultivation of commercially viable species would present a strong
option of income generation to community people. To establish self sufficient primary health care
system of this remotely placed tribal area, growing herbs in kitchen garden would not only supply
raw material at household level but ensure the revival of traditional knowledge and conservation of
valuable medicinal plants of the region. Development of kitchen garden growing herbs has greater
benefit to train community tribal people on conservation through nursery practices at small scale
before venturing into big ones. The current study may be of great use and interest to researchers,
pharmaceuticals, foresters and medicinal practitioners. The documentation finds Coochbehar
District a highly potential reservoir of high value medicinal plants and rich ethno medicinal
knowledge, and can also be a suitable agro climatic zone for the cultivation of herbal plant species.
Thus the current study will further help in both conservation of traditional ethnomedicinal
knowledge as well as the development of native villagers.

Parts of various medicinal plants were observed personally collected from forest areas and
preserved as herbarium specimens for identification. The medicine-men generally collect the plant
parts forest area. From the interview reports it was noticed that not only plant parts but also some
other ingredients were mixed with them forming pills or medicines. The dosage and modes of
application are specific for each medicine-men. One thing should be mentioned here that they do
not know the actual mechanism of actions of these medicines.

The study deals with 38 interview reports of various tribal medicine-men, in which 81 different
plants and plant parts used for curing different diseases, among which 9 are used as stress control
agent. This ethnomedicinal information collected from different medicine-men of the Coochbehar
District may help to the development of new or alternative drug in relation to stress resistant or
medicine of anxiety and insomneal. From the results of the present study regarding the traditional
knowledge collected from various tribal medicine-men of the District Coochbehar, may help to
develop some new medicines for the control of stress activity and other purposes. This type of study
will help to open a new avenue for the betterment of the human society also.
SUMMARY

Ethno-medicine means the medical practices for the treatment of ethnic or aborigine people for their health care needs. Indigenous traditional knowledge is an integral part of the culture and history of a local community. Plant products have been a source of curative and therapeutic agents since time immemorial. The application of plants as medicine dates back to prehistoric period. The early civilizations reveal that a considerable number of drugs that are used in the modern medicine have figured in the ancient manuscripts such as The Rigved, The Bible, The Quran, History of Herodotus etc. Over 6000 years ago, the ancient Chinese were probably the first to use the natural vegetation as a medicine.

During the past one century, there has been a rapid extension of allopathic medicinal treatment in India but still now the use of natural products as medicine, especially plant products are widely used among various tribal people particularly in the remote areas of West Bengal with few health facilities. Ethnomedicines are widely used across India. Scientific knowledge of these uses varies with some regions, such as the North Eastern India region, being less well known. Plants being used are increasingly threatened by a variety of pressures and are being categories for conservation management purposes. In conclusion, the present manuscript may be useful to supplement information with regard to its identification and in carrying out further research of its use in the treatment of various diseases.

In spite of researches about use and status of medicinal plants in various parts of India, no such scientific documentation has been made in Coochbehar District of West Bengal so far. So we designed this study to survey the use of medicinal plants among tribal people of Coochbehar District, as well as to check the recent status of the medicinal plants in this area. The term Koch and Rajbangshi are both synonymous and indicate the tribe which once dominated North Bengal,Goalpara and North side of Brahmaputra River.

As indigenous culture are closely maintained and used by the tribal and other forest dwellers throughout the Coochbehar District, considering the fact that traditional knowledge can form the basis for development of new medicinal product. It was an urgent necessity to record all information about plants which are used as anti-streses agent. The gradual decline in traditional use practices may, therefore, leads to the fading away of the indigenous knowledge associated with the plants in very near future.
This ethnomedicinal information collected from different medicine-men of the Coochbehar District may help to the development of new or alternative drug in relation to stress resistant or medicine of anxiety and insomnea.

From the results of the present study regarding the traditional knowledge collected from various tribal medicine-men of the District Coochbehar, may help to develop some new medicines for the control of stress activity and other purposes. This type of study will help to open a new avenue for the betterment of the human society also.