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Ethnobotanical studies on medicinal plants used by sugalis of yerramalais in kurnool district, Andhra Pradesh, India

S. Kahleel Basha¹, G.Sudarshanam²

Abstract

In India, the use of different pans of several medicinal plants to cure specific ailments has been practiced since ancient times. Ethnobotanical studies were carried out to collect information on the use of medicinal plants by the tribal community (Sugalis) who live in the forests of Yerramalais of Kurnool district, Andhra Pradesh, India. The present paper deals with identification of 40 medicinal plants, with local names used by Sugalis for different diseases. The information about different types of medicinal plants used by them for various diseases recorded orally by interviewing the elders, Vaidyas (doctors) of that tribe by visiting their habitats called Thandas. Collected plants are stored in the Departmental Herbarium of Osmania College, Kurnool. Most of the medicinal plants are taken in as roots, tubers, stem and leaves, are taken orally with or without combination of other plants, external applications like pastes, fumigation. Most of plants used by them are Herbs (42%), shrubs (20%), Trees (33%) and Climbers (5%). The most striking feature of tribal life is their simplicity. The forest is able to provide them with everything. Professionally they are peasants, food-gatherers, hunters, small farmers, and nomads. Sugalis use medicinal plants mainly for viral fevers, skin diseases, snake & scorpion bites and stomach problems. It is observed that the urban educated people are more aware of good effects of herbal medicine over allopathic medicine than the rural people. Due to the degraded forests and depleted resources, they are migrating to urban areas for livelihood. So there is a danger of losing knowledge of medicinal plants for human welfare. Hence there is an urgent need to document and popularize the value of herbal medicine among the rural people through Vana Samrakshak Samithi and other agencies.

Keywords: Ethnobotany, Sugalis, Thandas, Yerramalais, Eastern ghats.

Introduction

India is well known for significant geographical diversity which has the formation of different habitats and vegetation types. Plants especially trees are companions of man [1-3]. Forests are civilization lungs, the trees in them are the basis for life survival on this planet [4]. Plants have been used by man for both prevention and cure of various diseases [5-8]. With the advent of human
civilization, many systems of therapy have been developed primarily based on plants. Ayurveda, Sidda, Unani, etc., traditional systems of medicines are developed on the basis of medicinal plants [9-11]. The plant-based traditional medical systems continue to provide the primary health care to more than three-quarters of the world’s population. The World Health Organization has estimated that over 80% of the global populations rely chiefly on traditional medicine [12].

Fig: 1 Medicinal Plants of Yerramalai’s habit wise distribution

It is fact that natural forest are progressively sinking due to overexploitation, makes it obligatory to investigate scientifically and document our floristic wealth in order to use the same, rationally for development without destruction of the biological diversity [13]. They have degraded our surrounding to the extent of driving many species to extinction and threatening, the survival of thousands of others [14] Today continued deforestation and environmental degradation in many parts of forest brought about depletion of medicinal plants [15]. Most of the tribal people use different parts of the medicinal plants (Fig.2) to cure their deceases. Many medicinal plants occurring have yet to be subjected to rigorous chemical screening and pharmacological investigation.

Kurnool district is present in Andhra Pradesh, situated between eastern longitudes of 76°58'-78°56' and northern latitude of 14°54'-16°14'. The district is bounded by Prakasam district on the east, Anantapur and Kadapa district on the south while Bellary district of Karnataka state forms the western boundary. Yerramalai receives very low rainfall and they come under the southern thorn forest. The Eastern Ghats are a series of discontinuous low ranges running generally northeast–southwest parallel to the coast of the Bay of Bengal. The Nallamalais forms a series of parallel ranges in the Eastern Ghats of Andhra Pradesh. The region falls under tropical monsoon climate rainfall from both south-west monsoon and north-east retreating monsoon. Kurnool district is situated between eastern longitudes of 76°58'-78°56' and northern latitudes of 14°54'-16°14'. Yerramalai forest (Fig.4) show deciduous forest at Racherla, north Dhone, Gani and L. thanda, Betham cherla, Ramallakota forest etc.

Fig: 2 Medicinal Plants of Yerramalai’s- Comparative account of plant parts used in medicine

Tribals like any other group of population live in and depend upon environment. the present paper deals with the Sugalis (also called Banjers) (Fig.3) , one of the largest and advanced nomadic tribes of Andhra Pradesh, inhabiting the Yerraamalai range of Eastern Ghats of Kurnool district of Andhra Pradesh. Amidst the Yerramalai forest near kalva bugga, Bugga Rameswara temple is (Fig.3) present where sugalis worship. The data were collected from 15 Sugali settlements namely, Alayabad Thanda, Lakshaiahkunta Thanda, Gummitham Thanda, Sugali metta (Fig.4) Chimmarajupalem Thanda, Undutla Lobai, with 48 families carrying
agriculture, pastoralism as the mainstay of their economy in Dhone. Madhavaram, Peapaly, Veldurthy, Nadyal, Bethamcherla, Banaganapalli mandlas respectively of Kurnool District of Andhra Pradesh. However, the Kurnool pan of Yerramlais is relatively unexplored and little work has been done in context of ethnobotany. So the present study was undertaken on information of ethnobotanical plants used by Sugalis of Kurnool district,

Fig 3. Tribals (Banjars)

Fig 4. Yerramalai forest

Materials and Methods
Since the tribal societies are store houses, accumulated experience and knowledge on indigenous vegetation, the present information is an outcome of Ethnobotanical studies carried out for two years. A survey was concentrated on tribal pockets. Besides, local people (Local Vaidyas or Traditional healers, villagers and House wives) were also contacted. About 15 villages were interviewed. During the interview, the 12 informants whose age ranged form 50 to 70 years old, displayed specimens of medicinal plants. Some informants were taken to the field to locate the medicinal plants. First hand information on their traditional medicine was recorded. Repeated enquiries were made to understand their knowledge, methods of diagnosis and treatment of deceases. Data were collected on the specific parts of the plants used, collection, method of usage of the drug, dosage administration and the purpose for which is used. The medicinal plants are identified with the help of the floras (Gambel, Fischer, Ellis and T. Pullaiah) and finally confirmed with the herbarium of S,K University, Anantapur. The collected plants are stored in the Herbarium of Osmania College, Kurnool. Data was collected on the specific parts of the plants used, collection, processing and preparation of drug, dosage administration.

Conclusion
In ancient times, humans lived in the lap of nature and attributed divine qualities to it. It is fact that natural forests are progressively shrinking due to overexploitation, makes it obligatory to investigate scientifically and document our floristic wealth in order to use the same, rationally for development without destruction of the biological diversity [16]. Ethnobotanical research can provide a wealth of information regarding both past and present relationships between plants and the traditional societies. Indigenous herbal treatment is a part of the culture and dominant mode of therapy in most of the developing countries. Many medicinal plants occurring have yet to be subjected to rigorous chemical screening and pharmacological investigation.
<table>
<thead>
<tr>
<th>No.</th>
<th>Scientific name</th>
<th>Vernacular name</th>
<th>Family</th>
<th>Part used</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Abutilon indicum</td>
<td>tattu-benda</td>
<td>Malvaceae</td>
<td>Leaves</td>
<td>demulcent, rheumatism</td>
</tr>
<tr>
<td>2</td>
<td>Althaea rosea (L.) Cav.</td>
<td>javal/theetham</td>
<td>Malvaceae</td>
<td>root</td>
<td>anitgent</td>
</tr>
<tr>
<td>3</td>
<td>Abrus precatorius</td>
<td>masinjga</td>
<td>Fabaceae</td>
<td>root</td>
<td>cough, cold</td>
</tr>
<tr>
<td>4</td>
<td>Aristolochia indica</td>
<td>ulla/kwani</td>
<td>Aristolochaceae</td>
<td>Root</td>
<td>scorpion bite, mottled wounds</td>
</tr>
<tr>
<td>5</td>
<td>Anamnia buccilor</td>
<td>agajjawal</td>
<td>Lythraceae</td>
<td>whole plant</td>
<td>snake bite</td>
</tr>
<tr>
<td>6</td>
<td>Andrographis paniculata</td>
<td>nolavema</td>
<td>Acanthaceae</td>
<td>whole plant</td>
<td>fever, cough, bronchitis, diabetis</td>
</tr>
<tr>
<td>7</td>
<td>Argyreneovata (Burm. f. Bajhurt)</td>
<td>samadu/pala</td>
<td>Curv/Malvaceae</td>
<td>root</td>
<td>laxative, rheumatism, diabetis</td>
</tr>
<tr>
<td>8</td>
<td>Basilia variegata</td>
<td>mndhopitu</td>
<td>Fabaceae</td>
<td>Frawn</td>
<td>laxative, leucoderm, vaginal discharge</td>
</tr>
<tr>
<td>9</td>
<td>Butus monosperma (Lamak)</td>
<td>Moduga</td>
<td>Fabaceae</td>
<td>seed</td>
<td>antihelminthic, hernia, aphrodisiacic</td>
</tr>
<tr>
<td>10</td>
<td>Cassia angustifolia</td>
<td>nolavema</td>
<td>Caesalpinaceae</td>
<td>whole plant</td>
<td>jaundice, allergy, masses</td>
</tr>
<tr>
<td>11</td>
<td>Cassia fistula</td>
<td>koongi</td>
<td>Caesalpinaceae</td>
<td>leaves</td>
<td>prostate</td>
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<td>12</td>
<td>Cassia tinctoria</td>
<td>rela</td>
<td>Caesalpinaceae</td>
<td>bark</td>
<td>laxative, rheumatism, piles</td>
</tr>
<tr>
<td>13</td>
<td>Cassia vavijirio</td>
<td>budhi kakara</td>
<td>Sapindaceae</td>
<td>root</td>
<td>laxative, rheumatism, piles</td>
</tr>
<tr>
<td>14</td>
<td>Cestrum indicum</td>
<td>gaachha</td>
<td>Cestrum indicum</td>
<td>root</td>
<td>antirhythmic, antiscratch activity</td>
</tr>
<tr>
<td>15</td>
<td>Cissampus pterius</td>
<td>adv.bush neega</td>
<td>Menispermacae</td>
<td>root</td>
<td>antiperiodic, purgative, snake bite</td>
</tr>
<tr>
<td>16</td>
<td>Coldenia sucssine</td>
<td>nud uppi</td>
<td>Capparaceae</td>
<td>stem bark</td>
<td>tuberculosi</td>
</tr>
<tr>
<td>17</td>
<td>Costus speciosus (Koenig) amith</td>
<td>rela</td>
<td>Costaceae</td>
<td>leaves</td>
<td>bone fracture</td>
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<tr>
<td>18</td>
<td>Cynanchum barbiferum</td>
<td>adav draksha</td>
<td>Vitaceae</td>
<td>stem</td>
<td>repellant</td>
</tr>
<tr>
<td>19</td>
<td>Cynanchum barbiferum</td>
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<td>Vitaceae</td>
<td>root</td>
<td>oral contraceptive, antifertility</td>
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<td>20</td>
<td>Corydalis baccata</td>
<td>papavasamun</td>
<td>Erythraceae</td>
<td>leaves</td>
<td>rheumatic swellings</td>
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<tr>
<td>21</td>
<td>Decalcapus leucanthumii</td>
<td>amanari</td>
<td>Asclepiadaceae</td>
<td>root</td>
<td>antidiabetic, blood purifier, appetizer</td>
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<tr>
<td>22</td>
<td>Glycineus americano</td>
<td>nolavema</td>
<td>Herniaceae</td>
<td>stem bark</td>
<td>cancer</td>
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<tr>
<td>23</td>
<td>Gymnema syvendre (Ricr.) Br</td>
<td>podapari</td>
<td>Asclepiadaceae</td>
<td>leaves</td>
<td>antiasthmatic, lueventic, cardiacotic</td>
</tr>
<tr>
<td>24</td>
<td>Hymalaya racemulosa (L.) Poit</td>
<td>daktulasi</td>
<td>Labiaceae</td>
<td>fruit</td>
<td>diuretic, rheumatism</td>
</tr>
<tr>
<td>25</td>
<td>Helicteresia indica</td>
<td>guhaba</td>
<td>Sterculiaceae</td>
<td>seed</td>
<td>diabetes</td>
</tr>
<tr>
<td>26</td>
<td>Leonotis nepalensis (L.) Br.</td>
<td>nolavema</td>
<td>Labiaceae</td>
<td>whole plant</td>
<td>febrifuge</td>
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<tr>
<td>27</td>
<td>Justicia adnata</td>
<td>addasram</td>
<td>Acanthaceae</td>
<td>leaf</td>
<td>antiparasitic, anthemia</td>
</tr>
<tr>
<td>28</td>
<td>Justicia adnata</td>
<td>nangamule</td>
<td>Acanthaceae</td>
<td>root</td>
<td>antitamour</td>
</tr>
<tr>
<td>29</td>
<td>Koshchusus nattulas (L.) Kurz</td>
<td>nolavema</td>
<td>Acanthaceae</td>
<td>root</td>
<td>rheumatic swellings</td>
</tr>
<tr>
<td>30</td>
<td>Physalis minima L.</td>
<td>budha busha</td>
<td>Solanaceae</td>
<td>fruit</td>
<td>diuretic</td>
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<tr>
<td>31</td>
<td>Pterocarpus marsupium</td>
<td>yagi</td>
<td>Fabaceae</td>
<td>heartwood</td>
<td>leucoderma, urine antient</td>
</tr>
<tr>
<td>32</td>
<td>Scrophularia gardneriana</td>
<td>suli</td>
<td>Scrophulariacae</td>
<td>wood, root</td>
<td>fever, rheumatism</td>
</tr>
<tr>
<td>33</td>
<td>Triaconta acuminata (Lam)</td>
<td>kappi theega</td>
<td>Menispermaceae</td>
<td>root</td>
<td>scorpion bite</td>
</tr>
<tr>
<td>34</td>
<td>Trachysplenkenthi R. sm</td>
<td>undartekuktu</td>
<td>Euphorbiaceae</td>
<td>root</td>
<td>scorpion bite</td>
</tr>
<tr>
<td>35</td>
<td>Trifolium corniculatum L.</td>
<td>sipattheega</td>
<td>Fabaceae</td>
<td>stem</td>
<td>jaundice, chonic fever</td>
</tr>
<tr>
<td>36</td>
<td>Withania somnifera (L.)</td>
<td>babasani</td>
<td>Apocynaceae</td>
<td>stem bark</td>
<td>skin diseases</td>
</tr>
<tr>
<td>37</td>
<td>Withania somnifera (L.)</td>
<td>babasani</td>
<td>Apocynaceae</td>
<td>leaf</td>
<td>snake bite</td>
</tr>
<tr>
<td>38</td>
<td>Withania somnifera (L.)</td>
<td>babasani</td>
<td>Apocynaceae</td>
<td>stem bark</td>
<td>snake bite</td>
</tr>
<tr>
<td>39</td>
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<td>babasani</td>
<td>Apocynaceae</td>
<td>root</td>
<td>internal hemorrhage, rhinit</td>
</tr>
<tr>
<td>40</td>
<td>Withania somnifera (L.)</td>
<td>babasani</td>
<td>Apocynaceae</td>
<td>entire</td>
<td>diabetic, diuatic</td>
</tr>
</tbody>
</table>
Acknowledgment

We are thankful to Madam Aza Javeed Saheba, Secretary and Correspondent of Osmania college for their encouragement and permitting us to carry on this exploration work. We also express our sincere thanks to the Forest Department who helped us in tracing out the tribal villages and accompanying in the forest.

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Goud PSP, Pullaiah T. Folk veterinary medicine of Kurnool district, Andhra Pradesh.1996.
ABSTRACT:
Total of 21 plant species belonging to 18 families were reported by local practitioners for the treatment of jaundice and hepatitis. The paper provides traditional uses of few plant species in curing jaundice by the Sugali and Chenchu community residing in and around Yerramalais forest, their uses along with the dosage and combination with other plants are provided.

KEY WORDS: Jaundice, Hepatitis, Sugali, Chenchu.

INTRODUCTION:
Jaundice is the most common of all liver disorders. It is not a disease but rather a sign that can occur in many different diseases. Jaundice is the yellowish staining of the skin and sclerae (the whites of the eyes) that is caused by high levels in blood of the chemical bilirubin. The colour of the skin and sclerae vary depending on the level of bilirubin. It is a condition in which yellow discoloration of the skin and mucous membranes occur due to an increase in the bile pigments, namely, bilirubin in the blood. When the bilirubin level is mildly elevated, they are yellowish. When the bilirubin level is high, they tend to be brown. Jaundice is caused by Bilirubin which comes from red blood cells. When red blood cells yet old, they are destroyed. Hemoglobin, the iron-containing chemical in red blood cells that carries oxygen, is released from the destroyed red blood cells after the iron it contains is removed. Jaundice may be caused by an obstruction of the bile ducts which normally discharge bile salts and pigment into the intestine. The bile gets mixed with blood and this gives a yellow pigmentation to the skin. The obstruction of the bile ducts could be due to gallstones or inflammation of the liver, which is known as hepatitis, and is caused by a virus. Jaundice may result from various diseases or conditions that affect the liver,
Hepatitis A, Hepatitis B, Hepatitis C, Hepatitis D, Hepatitis E, Autoimmune hepatitis, Liver cirrhosis, Liver cancer, Hemolytic anaemia and Malaria. There is no unique treatment for jaundice and hepatitis by prescribing modern allopathic and homeopathic medicine.

In this context, the present study is the first milestone with particular emphasis on antiviral application of medicinal plants for jaundice and hepatitis. Chemical that remains in the blood after the iron is removed becomes bilirubin. The symptoms of jaundice are extreme weakness, headache, fever, loss of appetite, severe constipation, nausea, and yellow discoloration of the eyes, tongue, skin, and urine. The patient may also feel a dull pain in the liver region. Obstructive jaundice may be associated with intense itching. Pulse, tongue, nail, and eye examinations are important diagnosis methods used to reveal a person’s body humour and its imbalance. This will help the doctor in treating the disease. Quite a handful of tribes reside in every nook and corner of Eastern Ghats of the state Andhra Pradesh. Sugalis tribal community is one of the nomadic tribes who have settled down in villages called Thanadas like Gummitham thada, Sugali Lobai. The historical evidences reveal that they associated themselves with the forest which provides them all their day-to-day requirements. The present paper deals with the Sugalis (also called as Banjara or Lambadies) one of the largest and advanced tribes of Andhra Pradesh, inhabiting the Yerramalais range of Eastern Ghats of Kurnool District of Andhra Pradesh. The main objective of this paper is to analyse how these tribal pastoralists and peasants, agriculturists have interacted with the forest resources in utilizing them for jaundice.

Sugalis are still using the natural resources available in their surrounding to treat many diseases and accidental derangement. They believe in mantras and tantras also, in the view of snake bites, they are using the old tradition of treatment, i.e., by mantras along with the administration of particular plant drugs.

**STUDY AREA:**

Kurnool district (Fig. 1) is present in Andhra Pradesh, situated between eastern longitudes of 76° 58’ to 78° 56’ and northern latitudes of 14° 54’ to 16° 14’. The district is bounded by Prakasam district on the east, Anantapur and Kadapa district on the south while Bellary district of Karnataka state forms the western boundary. Yerramalais forest consists (Image 2) of 75% weathered rocks and remaining 25% forest is green and are scattered, not in continuous range. Yerramalais receives very low rainfall and they come under the Sothem thorn forest. The vegetation is varied depending upon the climate and edaphic factors. Apparently there are signs of forest becoming degraded from moist deciduous to scrub type dominated by thorny, succulent and xerophytic bushes. Some parts of the forest show valleys with streams in Owk, Maddilet, Racherla, North Dhone, Gani and lanjabanda forest showing slightly degraded
deciduous type of vegetation. The climate is characterized by hot summer. The year is divided into four seasons. The period from December to February is dry and comparatively cool season. The summer season is from March to May and it is followed by south west monsoons from June to September, while October and November form the post monsoon season. Generally mean daily average temperatures are above 35°C. Mean daily maximum temperatures are highest in May (48.4°C) and lowest in December (3°C). Like wise, the mean daily minimum temperatures are lowest in December and highest in May, Similarly humidity varies and it is lower in the months from December and January, but seldom drops below 50 per cent. The forest area receives rainfall of 591.6 mm during the south west monsoon and the remaining rainfall was received mostly during the north east monsoon. The monsoon is also erratic apart from being mostly below normal during the South west monsoon. The area is considered drought prone. The relative humidity varies between 27% and 55%. Most of the Yerramalai forest shows scrub type of forest dominated by thorny succulent and xerophytic bushes.

MATERIALS & METHODS:
In the present investigation we focused on medicinal plants used to treat jaundice and hepatitis. The study was carried out by interviewing respondents in thirty remote sites. The respondents were old age women, men, and healers themselves and had knowledge on the medicinal use of the plants for the said purpose. To collect data systematically on jaundice treatment questionnaires, semi-structured interviews and discussions were applied, included questions that target the local name of plant, parts used, methods of preparation and application. Total of 95 informants including 45 female, 40 male and 10 traditional healers were interviewed. Collected data was also cross checked in different areas from local informants either by showing the plant specimen or telling local names to the informants to verify the authenticity of claims, Chemical constituents prior informed consent (PIC) was used in carrying out this work (Table 1). Information on the chemical constituents of the plants reported under present investigation has been compiled from relevant sources (Nadkarni, 1976; Tyler et al., 1981; Haq and Rehman, 1990; Prajapati et al., 2006). Plants were collected in flowering and fruiting conditions and confirmed by using different herbaria. Specimens were dried, pressed, poisoned and mounted on herbarium sheets. All collected specimens were identified with the help of available literature (Pullaiah, 1995) and herbarium, S.K University, Anantapur, Andhra Pradesh, India. After correct identification, the specimens were deposited in Osmania College Herbarium, Kurnool for future references.

RESULTS AND DISCUSSION:
Data obtained from the present investigation is compiled in Table 1 and the plants species are arranged in alphabetic order. Total of 21 plant species belonging to 18 families have been reported for the treatment of jaundice and hepatitis. For each plant species botanical name, family, local name, parts used, chemical constituents, preparation and application are provided. The most dominating families were Euphorbiaceae with three species, Cassavaceae with two species, followed by Acanthaceae, Brassicaceae, Nyctaginaceae, Moraceae, Punicaceae, Fabaceae, Malvaceae, Meliaceae, Zingiberaceae, Cucurbitaceae, Asteraceae, Bignoniaceae, Pandanaceae, Liliaceae with one species each. Some of the highly utilized plant species include, Andrographis paniculota, Brassica juncea, Boerhaavia diffusa, Cucumis sativus, Morus alba, Phyllanthus amarus, Phyllanthus emblica, Phyllanthus niruri, Prunus domestica, Tamarindus indica and Tinospora cordifolia (Table 1). Different plant parts were used to cure jaundice and hepatitis. Among these fruits, whole plant were highly utilized followed by root, leaves, pods, seeds, bark and rhizome in decreasing order (Table 2). Data presented in (Table 1) shows that thirty five medications were used for jaundice and hepatitis that can be divided into two categories: those that prepared from (i) single plant and (ii) from more than one plant species. In majority of the cases these medications were prepared by using water as a medium and administrated along with buttermilk, water and sugar. In all the cases mode of application was oral. In regard to the patient conditions, the preparations were used more than two times daily from a week to month till the problem is cured. Jaundice results from various diseases or conditions that affect the liver. Mostly it is due to viral hepatitis A, B, C, D and E, liver cirrhosis and liver cancer. Some of the plant species mentioned in the present study used to cure jaundice and hepatitis have been investigated for their antimicrobial activities. For example the hexane and alcoholic extracts of P. emblica (fruit), T. indica (fruit) and P. granatum (fruit - pericarp) were found to be antimicrobial while Morus alba (fruit) show no antimicrobial activity (Ahmad et al., 1998). Aqueous extract of T. indica (fruit) shows positive response against antimicrobial activity. By comparing these plant species recorded to cure jaundice and hepatitis with available pharmacological literature reported from other regions of the subcontinent and world, it appears that there are many medicinal plant species in the area that were not reported in other locations. To our knowledge the use Phyllanthus emblica, Punica granatum to cure jaundice, have never been reported before. Protective effect of Curcuma longa on liver damage (Deshpande, U.R. et al., 1998). Decoction of fresh plant material of B. procumbens is used for the said purpose in the study areas, while other authors (Savithramma et al., 2007; Shah and Khan, 2006; Katewa et al., 2004; Sing et al., 2002; Khan et al., 2000) reported that leaves and roots of this plant are used for jaundice, swelling, watering of eyes,
anaemia, asthma, dropsy, gonorrhoea, stomach disorders, sore throat, to relief pain, typhoid, as cooling, antispasmodic and astringent. Dried fruit powder of P. emblica is used for said purpose in the study areas, while Ahmed et al. 2007, Savithramma et al. 2007, Muthu et al. 2006, Sing et al. 2002 and Shinwari and Khan 1998 reported that fruit, leaves and bark of this plant are used as eye tonic, astringent, cooling, diuretic, laxative, refrigerant, aperients, for asthma, diarhoea, dysentery, cold and cholera.

CONCLUSION:
Medicinal plants play a vital role in the life by serving good health and well being of mankind. Present study reveals unique utilization of medicinal plants by the tribes belonging to Chechus and Sugalis inhabited in Yerrlamalais forest of Kumool district of Andhra Pradesh. In the present investigation, 21 medicinal plant species used to treat jaundice and hepatitis were reported and documented. The use of these plants to treat various illnesses is still needed by the communities, because of poor socio-economic conditions the high cost and a difficult access to allopathic medicines. The majority of the reported species are wild and rare. These demand an urgent attention to conserve such vital resources to optimize their use in the primary health care system. Now a day, conservation of traditional knowledge is greatly menaced by a lot of factors related to modernization of the region and lack of interest in traditional healers, in transferring it to next generation. It is, therefore, urgent to save the cultural heritage of the natives, by confirming the therapeutically used plants with scientific criteria. In this context, screening for active substances and testing their activities against jaundice and hepatitis causing organisms form an interesting subject for the future studies.

ACKNOWLEDGEMENTS:
We are thankful to the Madam Azra Javeed saheba Secretary and Correspondent of Osmania college for their encouragement and permitting us to carry on this exploration work. We are also expressing our sincere thanks to the Forest Department who helped us in tracing out the tribal villages and accompanying in the forest.

REFERENCES:


FIG. 1: MAP SHOWING KURNOOL DISTRICT

IMAGE 1: SUGALITRIBES OF YERRAMALAIS FOREST

IMAGE 2: YERRAMALAIS FOREST
<table>
<thead>
<tr>
<th>Plant Name</th>
<th>Part Used</th>
<th>Active Constituents</th>
<th>Method of Administration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abutilon indicum L.</td>
<td>Leaf</td>
<td>Alkaloids, flavonoids, sterols, terpenoids, glycosides and water soluble siloxanomannan isolate from leaves.</td>
<td>Fried leaves are used</td>
</tr>
<tr>
<td>Tuturu benda Malvacuc</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Andrographis paniculata Nekavenu, Acanthaceae</td>
<td>Plant</td>
<td>Andrographoloids and rogerapholoid, reandrographoloid.</td>
<td>Drinking Leaf juice 1 or 2 spoons daily</td>
</tr>
<tr>
<td>Brassica juncea L.</td>
<td>Seed</td>
<td>Isothiocyanate, essential oils (limonene, linal, aliphatic alcohols).</td>
<td>Alum (50%)-brassica seed 3 g made into paste, eaten along with banana twice a day</td>
</tr>
<tr>
<td>Tella axilu, Brassicaceae</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bauhinia racemosa Lam, Casaceae</td>
<td>Bark, leaf, root</td>
<td>Flavonoids, coumaryl, phenols, tannins, glycosides</td>
<td>Water extract of bark, leaves and root taken two times daily after meal for 2-4 weeks</td>
</tr>
<tr>
<td>Cucumis sativus L. Dios kaya, Cucurbitacae</td>
<td>Fruit</td>
<td>Methyl-phydrostrol, amyrin, multifl organo, methylerythroartemol, cycloartenol, tircinol, protein, isoprenyl adenine triphosphate (Pyragulb, at. 2006)</td>
<td>Fresh fruit is cut into small pieces and is given to the patient thrice a day for a month.</td>
</tr>
<tr>
<td>Orzyxium indicum (Linn.) Bigonosoma</td>
<td>Dark</td>
<td>Oryzole, balzeleit, chrysin.</td>
<td>Bark powder is expressed in boiled water and 40% oil of extract is taken thrice a day for 2-3 weeks.</td>
</tr>
<tr>
<td>Plant</td>
<td>Part</td>
<td>Description</td>
<td></td>
</tr>
<tr>
<td>--------------------------------</td>
<td>------------</td>
<td>-----------------------------------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td><em>Pandanus amaryllifolius</em></td>
<td>Leaf</td>
<td>Pandanamine, pandunartetones (Nomano et al., 1993.)</td>
<td></td>
</tr>
<tr>
<td><em>Pipilanthus emblica</em></td>
<td>Fruit</td>
<td>Alanine, aspartic acid, humeric acid, lysine, praline, protein, fat, carbohydrates, fibers, minerals, iron, niacin, chromium and copper (Pratap et al., 2006)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Direct boil of <em>P. emblica</em> and seeds of <em>P. granatum</em> are grounded together along with sugar. Three teaspoons of the powder are dissolved in one cup of water and taken orally thrice a day for three weeks.</td>
<td></td>
</tr>
<tr>
<td><em>Punica granatum</em></td>
<td>Fruit, Seed</td>
<td>Citric acid, sorbitol, mannitol, pelliterine, isocorotin, Bistosterol, friedelina, D-mannitol, estrone, glucose, fructose, sucrose, maltose, oxalic acid and organic acid (Ikram and Hussain, 1978)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Dried fruit of <em>P. emblica</em> and seeds of <em>P. granatum</em> are grounded together along with sugar. Three teaspoons of the powder are dissolved in one cup of water and taken orally thrice a day for three weeks. Dried rind is grounded and two teaspoons of the powder are mixed with sugar and taken orally along with water at morning for a week.</td>
<td></td>
</tr>
<tr>
<td><em>Tabernanthea divaricata</em> (Linn.)</td>
<td>Root</td>
<td>Root powder is boiled in water and the extract is taken thrice a day for two weeks.</td>
<td></td>
</tr>
</tbody>
</table>
Multiple herbal therapy - Antimicrobial activity of wound healing paste (Pasuru) used by Sugali tribes of Yerramalais of Kurnool district, Andhra Pradesh, India

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Abstract: Antimicrobial activity was also studied against Bacillus subtilis, Escherichia coli (enteropathogen), Klebsiella pneumonia and Staphylococcus aureus and Staphylococcus by using cup-plate method. Erythromycin was used as standard antibacterial agent. The methanol extract was diluted into different concentration (1, 2, 4, 6, 8, 10 mg/mL) with DMSO. The results of the study revealed that, the Pasuru exhibited significant antibacterial activity. The presence of these bioactive constituents have been linked to the antimicrobial activity of the plant material.

Key words: Antibacterial activity, Methanolic extract, Yerramala forest, Sugali tribes, Multiple drug therapy, Pasuru.

Introduction

Nature has gifted us with many herbs having mystical healing properties that are used widely in number of ailments. The use of herbs and medicinal plants as the first medicines is a universal phenomenon. Today, as much as 80% of the world’s population depends on traditional medicine as primary health care needs. Ayurveda is an intricate system of healing that originated in India thousands of years ago. We can find historical evidence of Ayurveda in the ancient books of wisdom known as the Vedas. In the Rig Veda, over 60 preparations were mentioned that could be used to assist an individual in overcoming various ailments. Ayurvedic yogas (medicinal preparations) rolled on from Vedic period to the modern times, have passed on from the hands of Charak, Sushruta, Bhagavata, Chakradatta, Bhuvaprakash, Sarangdhar, Yadaviji, Bangassen and many others, but still persisting to remain unaltered. Surely this is the result of masterly formulations of the plant drugs. Several Ayurvedic medicinal preparation are made by combining 2 or 3 herbal plants extracts. Ayurveda is attracting people around the world with its essence. It is a well-researched & organized science with vast span of knowledge for all needs of our society. Use of herbal medicine has grown extensively in developed countries over the past decade. Multiple herbal therapies are of potential interest. Herbal blends and formulations combine the benefits of multiple herbs, which typically produces a
Synchronous action while minimizing the potential toxic effects of a single herb. Herbs provide many unique qualities that are very limited in conventional medicine, such as anti-cancer, anti-viral, and immunoregulation properties. Herbs are an excellent alternative to antibiotics in the treatment of infectious diseases, with wider antibacterial effects as well as various antifungal and antiviral actions. Some herbal formulations serve as detoxification agents, antioxidants, and anti-cancer therapies.

Antibacterial resistance especially among gram-negative bacteria is an important issue that has created a number of problems in the treatment of infectious diseases and necessitates the search for alternative drugs of natural anti-bacterial. It is necessary to evaluate, in a scientific base, the potential use of folk medicine for the treatment of infectious diseases produced by common pathogens. They can also be a possible source for new potent antibiotics to which pathogen strains are not resistant. This has forced scientists to search for new antimicrobial substances from various medicinal plants.

Local Sugali tribes use twenty-three herbs with different combinations to treat wounds are reviewed. The use and efficacy of the herbs in healing wound, and the chemical constituents of the plants are discussed. In regard to the wound condition, the preparations were applied more than one times daily until healing was evident. Multiple drug therapy plays a vital role in treating various ailments of human beings. Paumeni traditionally used for the treatment of wounds, it consists of Acalypha indica, Ficus bengalensis, Morus alba and Tridax procumbence. The ethnomedical claims that Acalypha indica, Ficus bengalensis, Morus alba and Tridax procumbence are wound healing herbs of Yerrasalais forest.

Study area:
Kumool district is present in Andhra Pradesh (Fig. 1), situated between eastern longitudes of 76°58'–78°56' and northern latitudes of 14°54'.16°14'. Yerrasalais forest covers over 1 lakh of the 4 lakhs hectares of forest in Kumool district. Yerrasalais receives very low rainfall and they come under the Southern thorn forest.
Materials methods:
Collection of plant material
Acalypha indica, Ficus bengalensis, Morus alba and Tridax procumbence were collected from Yerramala forest of Kumool district, Andhra Pradesh, India. The collected plant materials were thoroughly washed with running tap water, rinsed with distilled water and air dried under shade for 30 days. The collected plants are dried and reduced to fine powder and passed through the Sieve no. 100 and mixed in geometric proportion and packed in well-closed container.

Preparation of Pasuru:
About 100 g of the leaf powder (equal ratio of four plant powders was taken in a soxhlet extractor and extracted with methanol for 72 hours. The solvent was recovered by distillation in vacuo and the residue stored in the dessicator was used for subsequent experiments. Before use, each crude extract was re-suspended in their respective solvent to yield 50 mg extract residue per ml solvent.

Test Microorganisms
The test organisms included the gram-positive bacteria Bacillus subtilis, Staphylococcus aureus and gram-negative bacteria Klebsiella pneumoniae Escherichia coli and Streptococcus obtained from the Kumool Medical College, Kumool, Andhra Pradesh. The bacteria were grown in the nutrient broth at 37°C and maintained on nutrient agar slants at 4°C.

Preparation of Extract
Pasuru was extracted with methanol by maceration process. The different concentrations (1mg, 2mg, 4mg, 6mg, 8mg, 10mg/100 μl) were prepared with DMSO for antimicrobial activity.

Photochemical screening of the Pasuru
Phytochemical investigations of the Pasuru was carried out using the methods described by Kokate, Trease and Evans 1994 to check for the presence of phenolic compounds, flavonoids, tannins, Antimicrobial Activity: The antimicrobial activity was evaluated by employing 24 hrs cultures of B. subtilis, E. coli, S. aureus and Staphylococcus, using nutrient agar medium. The bacterial strains were transferred to sterile plates aseptically. The plates were left at room temperature and allowed for solidification. In each plate one well of 6 mm diameter were made using a sterile borer. Accurately 100 μl different dilutions of methanol extract of Pasuru (1, 2, 4, 6, 8, 10 mg) and single concentration of erythromycin (5 mg/ml) solutions were transferred to wells aseptically and labeled accordingly. The plates were incubated at 37±1°C for 24 hrs. The diameter of zone of inhibition surrounding each of wells was recorded.

Table 1: Antibacterial activity of methanol extract of Pasuru
<table>
<thead>
<tr>
<th>Microorganisms</th>
<th>1mg</th>
<th>2mg</th>
<th>4mg</th>
<th>6mg</th>
<th>8mg</th>
<th>10mg</th>
<th>Erythromycin 5μg/100μl</th>
</tr>
</thead>
<tbody>
<tr>
<td>E. coli</td>
<td>18</td>
<td>18</td>
<td>22</td>
<td>22</td>
<td>20</td>
<td>23</td>
<td>18</td>
</tr>
<tr>
<td>Staphylococcus</td>
<td>4</td>
<td>10</td>
<td>16</td>
<td>21</td>
<td>21</td>
<td>22</td>
<td>24</td>
</tr>
<tr>
<td>B. subtilis</td>
<td>6</td>
<td>10</td>
<td>18</td>
<td>18</td>
<td>18</td>
<td>18</td>
<td>25</td>
</tr>
<tr>
<td>S. aureus</td>
<td>12</td>
<td>12</td>
<td>14</td>
<td>13</td>
<td>15</td>
<td>17</td>
<td>18</td>
</tr>
<tr>
<td>K. pneumoniae</td>
<td>8</td>
<td>7</td>
<td>12</td>
<td>10</td>
<td>13</td>
<td>16</td>
<td>17</td>
</tr>
</tbody>
</table>

Table 2 Phytochemical screening of Medicinal Plants

<table>
<thead>
<tr>
<th>Plant</th>
<th>Tannins</th>
<th>Saponins</th>
<th>Flavonoids</th>
<th>Steroids</th>
<th>C. glycosides</th>
<th>Alkaloids</th>
<th>Phenols</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acalypha indica</td>
<td>*</td>
<td>*</td>
<td></td>
<td></td>
<td>*</td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>Ficus bengalensis</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td></td>
<td>*</td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>Morus alba</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>Tridax procumbence</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
</tr>
</tbody>
</table>
Results and Discussion

Antibacterial activity of different concentration of methanol extract of Pasuru was measured in terms of Zone of Inhibition. It revealed that significant antibacterial activity was showed against bacterial strains like *Escherichia* coli, staphylococcus, *Bacillus subtilis, Klebsiella pneumoniae* and *Streptococcus* in comparison with standard erythromycin. *Pasuru* showed maximum effect against *E. coli* and *Streptococcus* at small concentrations (Table 1). The antibacterial activity of *Pasuru* showed significant activity against *E. coli* and *S. aureus* at 1 mg/ml concentration. This activity is due to the constituents like *Acalypha indica*, *Ficus bengalensis*, *Morus alba* and *Tridax procumbens*, are having wound healing and antiseptic properties.

The use of specific herbs for medicinal purposes dates back thousands of years. Several herbs are mentioned in the Bible and *archaeologists* have documented herbal usage back to prehistoric times. Wound healing or wound repair is the body's natural process of regenerating dermal and epidermal tissue. Local communities use 28 indigenous phytotherapies to treat wounds. The method of preparation falls into four categories, paste, powder, juice and decoction. Fresh pulp, warm resin and leaves were also used. In regard to the wound condition, the preparations were applied more than one times daily until healing was evident. The flavonoids and *saponins* present in this herb can speed up wound healing, by strengthening the connective tissues. Present study provides baseline data on wound healing properties of native plants that can be exploited by *pharmaceutical* industry for screening new active compounds. Indigenous remedies which are more effective, safe and inexpensive are gaining popularity among both rural and urban areas. Information from *ethnic* groups or indigenous traditional medicine has played a vital role in the discovery of novel products from plants as *chemotherapeutic* agents (*Katewa et al.*, 2004). *Phytochemical* screening of the *Pasuru* revealed the presence of tannins, *saponins*, phenolics, flavonoids, cardiac *glycosides, anthroquinones* and *alkaloids* (Table 2).

Acknowledgment

Authors are thankful to *Allarim* college of Pharmacy, *Bangalore* (India) for providing their help in the successful completion of the work, We are also thankful to Madam *Azra Javed* saheba *Secretary* and *Correspondent* of *Osmania college* for their encouragement and permitting us to carry on this exploration work. We also express our sincere thanks to the *Forest Department* who helped us in tracing out the tribal villages and accompanying us in the forest.

References


EVALUATION OF ANTIBACTERIAL ACTIVITY OF SOME MEDICINAL PLANTS USED BY SUGALI TRIBE OF YERRAMALAI FOREST OF ANDHRA PRADESH


Evaluation of antibacterial activity of some medicinal plants used by Sugali tribe of Yerramalai forest of Andhra Pradesh

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ABSTRACT

In the present work an attempt has been made to evaluate the potential antibacterial activity of different plant extracts for the treatment of human diseases. Plants used for traditional medicinal purposes were screened for their antibacterial activity. Ethanolic plant extracts were prepared and used for antimicrobial screening. Ethanolic plant extracts were found to be effective against both gram-positive and gram-negative bacteria. The most susceptible bacteria were E. coli and Bacillus subtilis. Ethanolic extracts exhibited remarkable antibacterial activity.

Key words: Antibacterial, Anufagial, Medicinal Plants, Diffusion method

INTRODUCTION

Traditional systems of medicine play a very prominent role in the healthcare system of the rural people covering all types of ailments. Rigveda and Rthrer come from different chronological ages. Plants used in traditional medicine constitute a wide range of substances that can be used effectively against various infections in the body. The chemical importance of these substances and the plants in which they are found is of vital concern. The traditional system of medicine in India has grown up over hundreds of years and is based on various herbal medicines from the indigenous populations of the country.

Medicinal plants represent a rich source of antimicrobial agents. Plants are used medicinally in different countries and are a source of many potent and powerful drugs. Considering the use of medicinal plants as sources for antimicrobial agents, a systematic investigation was undertaken across the local flora for antibacterial activity from Asteraceae and Lamiaceae in the present study. The present study was designed to evaluate the antibacterial potential of different plant species used in India for medicinal purposes and to determine their efficacy against various human pathogens.

MATERIALS AND METHODS

The plants were selected for the study based on their traditional medicinal use. Fresh plant parts were collected from the treatment villages (Yerramalai) in Yerramalai Forest and Kurumul forest of Andhra Pradesh, India. The plants were identified, dried, powdered, and stored in polythene bags. The antibacterial activity of the powdered plant extracts was evaluated against various bacteria.

2. Preparation of the extracts

The powdered plant materials were extracted with distilled water for 6 h at slow heat. After an interval of 2 h, the mixture was filtered through a muslin cloth and centrifuged at 3,000 rpm for 5 min. The supernatant was concentrated to one-fifth of the original volume. The extract was assayed and stored at 4°C. This gave an aqueous extract of the plant material. To obtain a methanolic extract, 10 g of plant material was extracted with 100 ml of methanol and left overnight. The extracts were filtered and concentrated to one-fifth of the original volume. The extract was assayed and stored at 4°C. This gave an aqueous extract of the plant material.

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2.3 Evaluation of antibacterial activity

The aqueous and methanolic extracts of 45 species were screened for in vitro antibacterial activity by agar disc diffusion method (Rao et al. 1998) using discs of size 6 mm (Himedia) and agar well diffusion method (Peraza 1996) with a crater of size 5 mm respectively. For these bacterial strains, nutrient broth was adjusted to an optical density of 0.2 (OD) for incubation of the agar plates. An aliquot (0.2 ml) of inoculum was added to the melted Mueller-Hinton agar to form a thin layer (Himedia). For both methods, well and disc were introduced with 0.1 ml each of the aqueous and methanolic extract. Extracted water and methanol were taken as control. Following an incubation period of 24 h, the results were evaluated by counting the size of inhibition zone (mm) of each extract

3. RESULTS AND DISCUSSION

The complete details of the plants screened (Table 1) are shown in Table 1. A total of 15 extracts (aqueous and methanolic) from 3 different plant species belonging to 11 different families were screened for potential antibacterial activity (Figure 1). All the extracts have exhibited different degrees of antibacterial activity against bacteria. Most of the antibacterial activity was shown by the aqueous and methanolic extracts of the selected plants. The results are shown in Table 1.

The results of the screening are shown in Figure 1 and Figure 2. The results of the screening are shown in Table 1. The complete list of the plants screened is given in Table 1.

3.1 Antibacterial activity of plant extracts against Bacillus cereus

Bacillus cereus extracts were more active against gram-negative bacteria than gram-positive bacteria. Among the selected plants, the highest activity was shown by the aqueous extract of Pogonopsis lutea (retain screening). The results are shown in Table 1. The complete list of the plants screened is given in Table 1.

The results of the screening are shown in Figure 1 and Figure 2. The results of the screening are shown in Table 1. The complete list of the plants screened is given in Table 1.

3.2 Antibacterial activity of plant extracts against Staphylococcus aureus

Staphylococcus aureus extracts were more active against gram-positive bacteria than against gram-negative bacteria. Among the selected plants, the highest activity was shown by the aqueous extract of Pogonopsis lutea. The results are shown in Table 1. The complete list of the plants screened is given in Table 1.

3.3 Antibacterial activity of plant extracts against E. coli

Escherichia coli extracts were more active against gram-negative bacteria than against gram-positive bacteria. Among the selected plants, the highest activity was shown by the aqueous extract of Pogonopsis lutea. The results are shown in Table 1. The complete list of the plants screened is given in Table 1.

3.4 Antibacterial activity of plant extracts against Pseudomonas aeruginosa

Pseudomonas aeruginosa extracts were more active against gram-negative bacteria than against gram-positive bacteria. Among the selected plants, the highest activity was shown by the aqueous extract of Pogonopsis lutea. The results are shown in Table 1. The complete list of the plants screened is given in Table 1.

Acknowledgment

We are thankful to the University Grants Commission, New Delhi for the financial support provided to us for the work. We are also grateful to the staff of the Plant Physiology Laboratory, for their help in carrying out these experiments.

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