ETHNOBIOLOGICAL AND TRADITIONAL MEDICINE PRACTICES IN BURDWAN DISTRICT, WEST BENGAL, INDIA

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ABSTRACT

A comprehensive study on documenting traditional medicinal practices was carried between January 2013 to December 2014 at Burdwan district, West Bengal, India. The most of the people of the district are tribal. The tribals are use those medicine which are mostly synthesize from natural things or plant sources. This medicine are called ethnomedicine. For most of the tribal communities, there is a little published data on ethnomedicinally important plants, so at first by the help of survey data was collected from different tribal and non-tribal community. Here, a total of 25 traditional medicine practices were describe for the treatment of 11 disease. The mode of preparation and administration of the herbal treatment varied widely. Leaf or root was the most frequently used plant part in the herbal medicine preparation. In future, this study will enrich the data bank of ethnobotany and incorporate new information about non-conventional uses of plant medicine.

KEYWORDS: Ethnomedicine, Tribal, Medicinal knowledge, Burdwan district

INTRODUCTION

Plants have been used in traditional medicine for several thousand years. In different country accumulated different medicinal system based on their knowledge and culture. In India beside ayurveda, Siddha, and Unani medicine are very much accepted by most of the peoples [1]. This traditional knowledge of ayurvedic medicine is first written in 6th century BC at the time of Sushruta and Charaka, named charaka samhita and sushruta samhita [2]. The Sushruta Samhita, contains more than hundred chapters and explain cause of more than thousand number of disease and 700 medicinal plants and their uses [3]. During the last few decades, there was an increasing in the study of medicinal plants and their traditional use in different parts of the world [4]. Those plants mainly make this medicine and animal resource which are easy to collect by those practitioner and this medicine is reliable and at least side effect. However, this traditional knowledge passed on orally generation-to-generation without any written document and still retained by various indigenous groups around the world known as fakir, Baidya, Santha, Ojha etc. They conserved this knowledge consciously because they thought if this knowledge is distributed to everyone they may lose their profession [5].

Ethnobotany is a study and relationship of people and plants. It is a complex relationship between cultures and use of plants on human societies in different way like as food, fodder, medicine, dye, cosmetics, textile, construction, clothing, and in social life [6]. The term ethnomedicine is a part of ethnobotany where plants related with medicine production are described. In 77th A.D great Greek surgeon Pedanits Dioscorides was
published “De Materia Medica” which is a book of information about 600 plants used by ancient Greeks in medicinal purpose [7].

Now a days ethnomedicine is a study of traditional medicine practiced by various ethnic group and specially indigenous peoples, so that sometimes it is called as traditional medicine. Traditional medicine (also known as indigenous or folk medicine) comprises knowledge systems that developed over generations within various societies before the era of modern medicine [8].

Tribals are those people lived in India from a historical period. This traditional knowledge based on herbal medicine still use in various communities [9]. In India it is reported that traditional medicine user uses 2500 plants and among them 100 species of plants are serve as regular source of medicine [10]. For conservation of ethnomedical knowledge through detail survey is very important. The most important approaches are to discovery of drug [11]. Therefore, this study focused on surveying and documenting the traditional medicinal practices used for meaning different ailments in India.

METHODOLOGY

Survey is one of the fittest methods to collect data [12]. During survey questioner method was adopted seriously [13]. Data was collected from ethnic people. These plants were identified by standard method of Bentham and Hooker 1973.

Survey Station

Most of the people of Burdwan district are dominated by tribal community. The community holds the ethnic culture and they use the ethnic medicine in their today life. So, Kalna subdivision of burdwan district was selected as survey station. One of the most remote part of burdwan district is kalna subdivision. Kalna subdivision is a heterogenous assemblage of various community and race. It situated between 23.22°N 88.17°E. There are five important blocks are situated in this area: Kalna–I, Kalna–II, Manteswar, Purbasthali–I and Purbasthali–II. The main data sources consisted of a series of semi-structured questionnaires and informal interviews administered on local herb sellers, the tribal person like-gujin, kaviraj, baidya, fakir, and the groups of people rich in traditional medicine knowledge. The administration of questionnaires and informal interviews were done for three years, between January 2013 and December 2014. There are twenty-five plants with different medicinal value is reported here. Plants are identified with help of Bentham and Hooker (1973) standard method.

Methods Adapted by Ethnic People for Medicine Preparation

Most of the ethnic people use raw plant material like root, leaf, bark, fruit and seed oil. The medicine is prepared added with substance like-mustered oil, wax, honey etc. Sometimes they used more than one compound in a specific amount and make a composite mixture.

Procedure of Use of Ethno Medicine

Raw plant material

Most of the people who uses ethnomedicine are suggested to chewed raw plant parts directly or sometimes added with sugar, black peeper, honey, Banana, Cow or goat milk etc. For external use latex or sap of plant paste of leaf applied singly or with coconut oils, cummins, or salts.

Cooked medicine

Medicinal plants were boiling with vegetable and syrup was prepared. Syrup is mixed with rich amount of honey. Sometimes plant parts cooked directly in coal wrapping with banana, sal or turmeric leaf also used.

Paste

Medicinal Plants were massacre with stone to prepare a paste. The paste were uses for different ailment.

RESULT

During survey on local ethnic people the data were recorded and represented it in a chart. It is to be found that most of the tribal are believes on nature as God. The traditional medicine or ethnomedicine is also very effective to cure their disease. The data is present here indicate a rich knowledge of folk medicine. A total of 25 herbal remedies were described for the treatment of 11 different ailments in this study (Table 1). Most of plants are belonging to family like fabaceae, Nyctaginaceae, Malvaceae, Amarenthiaceae, Poaceae, Liliaceae, Poaceae etc. These are to be found more useful in mankind. The ailments include Chicken Pox, Virus attack, Missiles, Cough, bronchitis, common cold problem, cough, asthma, Urinal problem, dysentery, Parasitical and fungal skin infection, scorpion bite, Jaundice, anemia, Menstrual problem (Table 2). Furthermore, some plants species and other ingredients were mentioned in the herbal remedies described. The mode of administration of the herbal treatments varied from oral administration (drinking, chewing, licking and eating), making incisions, bathing, spraying/spreading to topical application (Table 2); while the method of preparation varied widely. The methods encountered in this study include infusion, decoction, maceration, spraying, squeezing, burning/charring, soaking (in water), grinding/pounding, drying and pulverization into powder and many other variant method.
<table>
<thead>
<tr>
<th>Sl No</th>
<th>Plant Name (local)</th>
<th>Scientific Name &amp; Family</th>
<th>Medicinal Part Uses</th>
<th>Use in the Diseases</th>
<th>Dose of Medicine</th>
<th>Medicinal Course</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Jilabli (Ben)</td>
<td><em>Pithecellobium dulce</em> (Fabaceae)</td>
<td>Bark of plant soaked in a cup of water for at least 12 hrs after that it taken at early morning in empty stomach</td>
<td>Chicken Pox, Virus attack, Missiles</td>
<td>4-5 gm bark in cup of milk</td>
<td>10-12 days</td>
</tr>
<tr>
<td>2.</td>
<td>Ada</td>
<td><em>Zingiber officinale</em> (Zingiberaceae)</td>
<td>Decoction of zingier along with <em>Adhatoda vasic</em> leaf extract mixed in same amount taken in empty stomach.</td>
<td>Pox, Fever, Chicken pox etc.</td>
<td>4-5 gm bark in cup of milk</td>
<td>7 days, twice a day</td>
</tr>
<tr>
<td>3.</td>
<td>Aswagandha</td>
<td><em>Ambroma augustum</em> (Malvaceae).</td>
<td>Soaked in water for a day and taken it in empty stomach.</td>
<td>Effective on dysmenorrheal problem and white vaginal discharge on women. Vegetable meal also prescribed with it.</td>
<td>5 gm dry bark</td>
<td>2-3 months, Except the time of menstrual cycle</td>
</tr>
<tr>
<td>4.</td>
<td>Amra</td>
<td><em>Spondias mangifera</em> (Anacardiaceae)</td>
<td>Young bark paste with cow milk, taken once in the morning at empty stomach.</td>
<td>Effective in jaundice and liver problem. Vegetable meal also prescribed with it.</td>
<td>2-3 gm wet bark paste with cow milk.</td>
<td>1 months</td>
</tr>
<tr>
<td>5.</td>
<td>Brihati</td>
<td><em>Solanum indicum</em> (Solanaceae)</td>
<td>Paste the fruit and taken it with the clove paste in empty stomach.</td>
<td>Effective in jaundice and liver problem. Vegetable meal also prescribed with it.</td>
<td>3-4 ripe fruit</td>
<td>1-2 weeks</td>
</tr>
<tr>
<td>6.</td>
<td>Cinnamon bark (Daruchini)</td>
<td><em>Cinnamon sp.</em></td>
<td>Soaked in water full night and mixed honey with in it and taken in morning.</td>
<td>Cough, bronchitis, common cold problem.</td>
<td>1-2 gm daily</td>
<td>7 days.</td>
</tr>
<tr>
<td>7.</td>
<td>Indian bay leaf (tejpata)</td>
<td><em>Cinnamomum tamala</em> (Lauraceae)</td>
<td>Soaked in water over night and taken in the morning at empty stomach</td>
<td>Urinal problem, Blood urine</td>
<td>3-4 no. of leaves</td>
<td>1 months</td>
</tr>
<tr>
<td>8.</td>
<td>Kakmachi</td>
<td><em>Solanum nigrum</em> (Solanaceae)</td>
<td>Root of this plant collect at evening paste it and collect the sap. Then taken it with Black peepers</td>
<td>Urinal problem.</td>
<td>5 gm of paste with 2-3 Black peepers</td>
<td>One week</td>
</tr>
<tr>
<td>9.</td>
<td>Chupri alu</td>
<td><em>Dioscora sp</em> (Discoriaceae)</td>
<td>Tubers</td>
<td>Effective on ulcers and dysentery.</td>
<td>Use as Supplement of normal potato</td>
<td>Continue for long time</td>
</tr>
<tr>
<td>10.</td>
<td>Dhania</td>
<td><em>Coriandrum sativum</em> (Apiaceae)</td>
<td>Water extract of seeds mixed with sugar.</td>
<td>Reduce urinary track infection, irritation and burning</td>
<td>Two tea spoon of extract with one teaspoon of</td>
<td>Upto total cure of disease</td>
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</tr>
</tbody>
</table>
| 11. | Tentul | *Tamarindus indica*  
(Fabaceae) | Bark soaked in coconut water for two days. | Reduce pain in digestive track, removes gases and effective in dysentery. | 5-6 gm. gm  
In One cup of water  
Regular when needed |
| 12. | Apang | *Aerva aspera*  
(Amaranthaceae) | Young leaf paste | Effective in leprosy | 4-5 leaf paste taken in wound place.  
Taken upto cure. |
| 13. | Banhi sikha | *Gloriosa superb*  
(Liliaceae) | Rhizomes | Parasitical and fungal skin infection, Scorpion bite  
Rhizone are taken from a mature plant.  
Taken upto cure. |
| 14. | Jastho madhu | *Glycyrrhiza glabra*  
(Fabaceae) | i. Dried root 
ii. Young leaf paste | i. Cough, bronchitis  
ii. Scalds of head | 1-2 gm.  
As needed  
4 weeks |
| 15. | Tula | *Gossypium sp*  
(Malvaceae) | Root paste used to treat fever | Fever | 4-5 gm paste with other ingredients.  
3 days |
| 16. | Raktojaba | *Hibiscus sp.*  
(Malvaceae) | Bark soaked in water overnight and in morning warm up it then drink. | Curing for menstruation problem. | 7 days before starting of menstrual cycle  
One cup in morning |
| 17. | Punarnaba | *Boerhavia sp*  
(Nyctaginaceae) | Root paste | Used in anemia. Jaundice, anemia. | 5-10 gm  
2-3 weeks |
| 18. | Bihati, kandikari, punarnaba, satamuli, nim gulancha, Aamada, Mut ha grass, Jasthimadhu, Radhachura | All types of root paste | Effective in jaundice. | Equal amount of each ingredients taken and make a syrup. | 3 weeks |
| 19. | Banarlathi | *Cassia fistula*  
(Fabaceae) | Juice of leaves | Used as skin disease  
20-25 no. of leaf are taken and make juice  
1months. |
| 20. | Akanda | *Calotropis sp*  
(Apocynaceae) | Powdered root bark | Use in cough, asthma, dysentery.  
30-40 mg of root powder  
Taken upto cure |
| 21. | Dalim | *Punica granatum* *(Lythraceae)* | Young leaf paste juice with molasses is taken in morning | Anemia and lack of hemoglobin | With milk | 4-5 no of leaf | 4-5 weeks. |
| 22. | Misti Kumra | *Cucurbita maxima* *(Cucurbitaceae)* | Mature dried seed extract oil mixed with coconut oil. | Applied to scalp to stop hair falling. | | | 20-30 no. of seeds are taken and make extract. | 1 months |
| 23 | Durba | *Cynodon dactylon* *(Poaceae)* | Crushed root mixed with curd. | Effective for bleeding piles. | Small bunch of grass extract. | | | 1-2 months. |
| 24 | Fani Manasa | *Euphorbia sp* *(Euphorbiaceae)* | Milky juice. | To remove warts, effective in scorpion and honey bee bite. | Drop of latex are taken | | | 2-3 weeks |
| 25 | Turmeric | *Curcuma longa* *(Zingiberaceae)* | Rhizomes | Urinal problem | Freshly prepared paste of turmeric mixed with double amount of molasses | | | 1 months |

### Table 2: Use of Different Medicinal Plants in the Treatment of Different Diseases

<table>
<thead>
<tr>
<th>Name of Disease</th>
<th>Parts of Plants use</th>
<th>Plant Name</th>
<th>Medicinal Course</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pox, Chicken Pox, Virus Attack</td>
<td>Bark</td>
<td><em>Pithecellobium dulce</em></td>
<td>10-12 days</td>
</tr>
<tr>
<td></td>
<td>Corm</td>
<td><em>Zingiber Officinalis</em></td>
<td>7 days, twice a day</td>
</tr>
<tr>
<td>Fever, Common Cold</td>
<td>Bark</td>
<td><em>Ambroma augustum</em></td>
<td>2-3 months</td>
</tr>
<tr>
<td></td>
<td>Bark</td>
<td><em>Cinnamon sp.</em></td>
<td>7 days</td>
</tr>
<tr>
<td></td>
<td>Dried Root</td>
<td><em>Glycyrrhiza glabra</em></td>
<td>2-4 weeks</td>
</tr>
<tr>
<td></td>
<td>Root Bark</td>
<td><em>Calotropis sp</em></td>
<td>Taken till cure</td>
</tr>
<tr>
<td>Jaundice and liver problem</td>
<td>Young Bark</td>
<td><em>Spondias mangifera</em></td>
<td>1 months</td>
</tr>
<tr>
<td></td>
<td>Fruit Paste</td>
<td><em>Solanum indicum</em></td>
<td>1-2 weeks</td>
</tr>
<tr>
<td></td>
<td>Root Paste</td>
<td><em>Boerhavia sp</em></td>
<td>2-3 weeks</td>
</tr>
<tr>
<td></td>
<td>Mixture Syrup</td>
<td>Bihati, kandikari, satamuli, nimgulancha,</td>
<td>3 weeks</td>
</tr>
</tbody>
</table>
### Skin Problem
- Young leaf Paste: *Aerva aspera* - Taken till cure
- Rhizoms: *Gloriosa superba* - Taken till cure
- Young leaf Paste: *Glycyrrhiza glabra* - 2-4 weeks
- Juice of leaves: *Cassia fistula* - 1 months
- Milky Juice: *Euphorbia sp.* - 2-3 weeks

### Urinal Problem
- Bark: *Ambroma augustum* - 2-3 months
- Leaf: *Cinnamomum tamala* - 1 month.
- Rhizome: *Curcuma longa* - 1 month.
- Root paste: *Solanum nigrum* - One week
- Seed extract: *Coriandrum sativum* - 1 months

### Dysentery
- Tubers: *Dioscora sp.* - continuously
- Bark extract: *Tamarindus indica.* - Regular when needed
- Root Bark: *Calotropis sp.* - Taken till cure
- Crushed Root: *Cynodon dactylon* - 1-2 months
- Dried bark dust: *Ferula narthex* - Taken till cure

### Menstrual problem
- Bark soaking water: *Hibiscus sp.* - 7 days

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### DISCUSSION

In tribal culture folk medicine is a well known and well believed system. In the era of modern medicine tribal peoples avoid allopathic and homeopathic medicine to cure their disease. All the ethnic people uses plant and animal source for preparation of ethnomedicine. Folk medicine is not a well define accurate system but the diagnosis and treatment is based on trial and error methods. They prepare paste, powder, pills, aqueous solution and decoction, for both oral and external uses from a single plant or combination of plant. Usually it is very important to know that which parts of those plants is use to preparation ethnomedicine. In spite of preparation of these medicines, amount of plants parts use, how many days taken for curing those disease is also very important for study.

This study shows that traditional medicinal practices have been widely accepted and has a long history among the Tribal people of Burdwan district. Majority of the herbal recipes were observed to be polyherbal. Polyherbal therapy is said to be a current pharmacological principle having the advantage of producing maximum therapeutic efficacy with minimum side effects[14]. According to Tiwari and Rao [15], polyherbal therapies have the synergistic, potentiative, agonistic/antagonistic pharmacological agents within themselves that work together in a dynamic way to produce therapeutic efficacy with minimum side effects.

From the historical period *Zingiber Officinalis* (*zingiber*) is a most useful as condiment purpose. Wood [16] reported that zingiber has a medicinal value and it use to cure dyspepsia, gastro paresis and constipation. Beside it ethnic people use this zingiber rhizome decoction with *Adhatoda* leaf to cure pox, fever, and chicken pox. *Ambroma sp.* generally known as Aswagandha is a useful medicinal herb. It is reported that its root paste and berry fruit is usually use to cure tumor, carbuncles and ulcers [17]. The ethnic people soaked the bark in water for overnight. The soaked water taken by the patient to cure dysmenorrheal problem.
Spondias mangifera (Amra) is also well known plant in southern parts West Bengal, which fruit use as preparation of vegetable purpose. Some worker reported that this plant has a useful medicinal value [18]. But at the time of survey it was noted that, to cure Jaundice and liver problem. Make a paste of the young bark of Spondias mangifera and the paste of this plant mixed with cow milk and taken at morning in empty stomach.

Solanum indicum (Brihati) is a common plant of solanaceae which fruits are rounded and known as berry fruit. An ethnic person uses its paste together with cloves to cure jaundice and fatty liver problem. It was reported that it was use in blood detoxification. It has diuretic actions. The fruit juice extract is also used to external application in alopecia treatment [19].

In the treatment of Cough, Bronchitis, common cold ethnic people uses cinnamon bark soaked water together mixed with honey which is also supported by modern science. Solanum nigeum, commonly known as kakmachi, is used by ethnic people to cure the urinary problem. Sap of the root is taken for one week. But Paris[20] reported that this plant has a analgesic, sedative, powerful narcotic activity and use to cure ulcers, asthma, tuberculosis.

Discoria sp is (Chupri alu) a plant which bulbs are effective to cure ulcer and cancer, but according to ethnic people it is use to cure dysentery. Acacia arabica is a plant, which contains high source of tannins, catechol, catecholamine etc., but there is no strongly recommendation to this plant as medicinal purpose [21]. However, ethnic people use gum extract of this plant to cure dysentery.

Leprosy is a disease usually affected to villagers. Ethnic people treat this disease by using Aerva aspera (apang) The paste leaf is use to the treatment of leprosy. Previously it was reported that this plant is stomachic, carminative, astringent and good diuretic[22].

Gloriosa Sp (Bannhi sikha) is a alkaloid rich plant has long been used as traditional medicine in many cultures. It is very effective to cure open wounds, snakebites, itching, leprosy, typhus, kidney disease[23]. But at the time of survey it was noted that local ethnic people use this plants rhizome to cure parasitical and fungal skin infection.

Glycyrrhiza sp. is a plant of Fabaceae family commonly known as jasthomadhu, is a good source of glycyrrhizin. Glycyrrhiza sp. is very effective to progression of viral and hepatitis. It has antiviral, antimicrobial, and anti-inflammatory effect[24]. From the survey data it is to be found that ethnic people use this plant as to cure cough and bronchitis. It is also use to cure scalds of head.

Gossypium sp. a plant of malvaceae is a very common plant (Tula), which fiber is use to make cotton and also use to make daily household things. Beside it, ethnic people also use the root of the plant to cure fever.

Boerhavia sp. (Punarnaba) is a very important medicinal herb which use as digestive power enhancement, spleen enlargement and reliving abdominal pains[25]. According to recent survey data, ethnic people use this plant as curing anemia and jaundice.

Cassia fistula is also a common Indian herb usually known as Banar lathi, it has medicinal value to treat constripation, ulcers, piles, common cold and cough disorder[26], beside it ethnic people use this plant leaf extract to cure skin disease.

Calotropis sp. (Akanda) is a unique traditional medicinal plant, which is use for common diseases like fever, rheumatism, cough, cold, vomiting, diarrhea and asthma[27]. At the time of survey it is known that ethnic medicinal man prescribed the extract of this plant take with milk to treat asthma.

Punica granatum (Dalim) is a fruit containing plant which is use for treatment of prostrate and skin cancer, skin disorder, arthritis, sore throats and urinary infections[28]. Survey data shows that ethnic people use paste of young leaf and juice with molasses to cure anemia.

Cynodon dactylon is known as durba ghas is a valuable herbal medicine and used as first aid for minor injuries to stop bleeding ,eye disorders and weak vision[29]. Beside it, tribal people use this plant extract to cure pile. To treat insect bites juice of Euphorbia Sp (fani manasa) is used everyday.

Curcuma longa (Fam: Zingiberaceae) commonly known as turmeric, is a medicinally important plant from historical time. It is taken as the blood purifier and is very useful in the common cold, leprosy, chronic liver disease, dropsy, inflammation, and wound healing. It is even used for contraception, swelling, insect stings, wounds, whooping cough, inflammation, internal injuries, pimples, injuries[30]. It is reported from survey that ethnic people use this plant to cure various urinary problem and it is prescribed with molasses.

From the above discussion it would be noted that all the plants having a medicinal value. Ethnobotanical survey has been found to be one of the reliable approaches to drug discovery.

CONCLUSION

This study has demonstrated the therapeutic properties of plants that can be used for the treatment of various diseases, which can be prepared and used directly. Actually traditional ethnomedicine and the knowledge of these medicine is conserved with in the community and there is no written information. There is very urgent need of conserve the knowledge of the traditional medicine for human civilization. This kind of knowledge may help to explore new era of Ayurveda in future.

ACKNOWLEDGEMENT

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