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Ethno-botanical Survey of Traditional Medicine Practice for the Treatment of Cough, Diabetes, Diarrhea, Dysentery and Fever of Santals at Abdullahpur Village under Akkelpur Upazilla of Joypurhat District, Bangladesh

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Abstract A comprehensive survey with the aim of documenting traditional medicinal practices was carried out during October 2012 to November 2013 of Santals at Abdullahpur Village under Akkelpur Upazilla of Joypurhat District, Bangladesh. This article focuses on the treatment of cough, diabetes, diarrhea, dysentery and fever. In the present medico-botanical survey, a total of 36 plant species under 36 genera and 25 families were collected and recorded for their use in various ailments. Habit analysis shows that herbs, shrubs, climbers and trees are represented by 13, 5, 4 and 14 species, respectively. For each species scientific name, local name, family, habit, mode of uses and part(s) used are provided.

Keywords: *ethno-botany, traditional medicine Practice, Santals, Joypurhat, Bangladsh*

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1. Introduction

Ethno-botany is the study of relationship between plants and people: From 'ethno'-study of people and '-botany'- study of plants. Ethno-botany is considered as a branch of ethno-biology. Ethno-botany studies the complex relationships between (uses of) plants and cultures. The focus of ethno-botany is on how plants have been or are used, managed and perceived in human societies and includes plants used for food, medicine, divination, cosmetics, dyeing, and textiles, for building, tools, currency, clothing, rituals and social life [9].

Ethno-botany, in its totality, is virtually and old field with new dimension of research. And if this field is investigated thoroughly and systematically, it will yield results of great value missing the ethnologists, archaeologists, anthropologists, plant-geographers, ethno-botanists, botanists and linguists and ultimately to pharmacologists and phytochemists. It will appear to be a bridge between botany and medicinal plants, but in fact it is much more. It starts as step before ever botany in the sense supplies the 'idea' and the basic material for botanical research and study. It then takes us to the usefulness of medicinal plants. It goes a step further to help us in the application of the knowledge about the medicinal plants among the primitive people by rapport through the medicine men [8].

Over the past two decades several medicinal and ethno-botanical studies in Bangladesh have been carried out [2,3,11,13-27]. But none of them was devoted to ethno-botany in the study area. The article focused on the traditional medicinal practices used for the treatment of cough, diabetes, diarrhea, dysentery and fever of Santal community at Abdullahpur Village under Akkelpur Upazilla of Joypurhat district, Bangladesh

2. Methodology

2.1. Study Area

Akkelpur is an Upazilla of Joypurhat District in the Division of Rajshahi, Bangladesh. Akkelpur is located at 24°58′30″N 89°01′15″E 24.9750°N 89.0208°E with a total area of 139.47 km². It is the smallest Upazilla in Joypurhat Zila. As of the 1991 Bangladesh census, Akkelpur has a population of 126,046, with It has 24,475 units of household as of the 1991 Census. Males constitute 52.9% of the population, and females 47.1%. This Upazilla's eighteen up population is 68033. Akkelpur has an average literacy rate of 34% (7+ years), and the national average of 32.4% literate. The annual rainfall is 1350mm. Temperature of the area is low in January varies from 9.0°C to 14.1°C. From February an increasing trend of temperature is found up to April and thereafter

temperature start to decline. In April temperature varies from 22.6°C to 36.9°C. The mean relative humidity is found to be low in March (65%) and high in July-September (88-89%) [5].

2.2. Ethno-botanical Survey

In the present survey, a total of 36 plant species belonging to 36 genera and 25 families were recorded. A total of ten field trips were made for documentation. During the field interview, the information was noted in the documentation data sheet. All the information regarding plant species, biological forms, habitat, local names and uses was documented. Medicinal information was obtained through informal interviews following semi-structured from knowledgeable person's particularly local Kabiraj/Herbalists and elderly people. Plant specimens were collected with flowers and fruits and processed using standard herbarium techniques [4]. The specimens were identified consulting with the experts, by comparing herbarium specimens and available literatures [1,7,10,12]. The voucher specimens are stored at Rajshahi University Herbarium (RUH) for future reference.

Table 1. List of medicinal plants and their use in cough, diabetes, dysentery, diarrhea and fever of Santals in Joypurhat district of Bangladesh

S/N	Scientific name	Local name	Family	Habit	Parts used	Mode of use
1	*Aegle marmelos* (L.) Correa	Bel	Rutaceae	Tree	Fruit, leaf	Decoction of immature fruits is used in baby's dysentery. Juice of young leaves is used in fever.
2	*Allium cepa* L.	Piaj	Liliaceae	Herb	Bulb	Juice of bulb is used in cough.
3	*Alstonia scholaris* (L.) R.Br.	Chatim	Apocynaceae	Tree	Bark	Juice made from bark is used in dysentery and fever.
4	*Amaranthus spinosus* L.	Kantanotey	Amaranthaceae	Herb	Whole plant	Juice made from whole plant is used in fever.
5	*Ananas comosus* (L.) Merr.	Anaros	Bromeliaceae	Herb	Fruit	Ripe fruit is used in cough. Ripe fruit is used in fever.
6	*Andrographis paniculata* Nees.	Kalomegh	Acanthaceae	Herb	Whole plant	Juice made from whole plants is used in diarrhea, fever and dysentery.
7	*Annona squamosa* L.	Ata	Annonaceae	Tree	Root	Juice of roots is used in dysentery.
8	*Argemone mexicana* L.	Sialkanta	Papaveraceae	Herb	Stem	Curry made from of stems is used in diabetes.
9	*Artocarpus heterophyllus* Lamk.	Kathal	Moraceae	Tree	Root	Juice made from young roots is used in diarrhea.
10	*Asparagus racemosus* L.	Satamuli	Liliaceae	Climber	Root	Juice made from the tuberous roots is used in diabetes and diarrhea.
11	*Averrhoa carambola* L.	Kamranga	Averrhoaceae	Tree	Fruit	Fruits are used in fever.
12	*Bombax ceiba* L.	Shimul	Bombacaceae	Tree	Root, bark	Juice made from immature plant roots are used in diabetes. Juice made from barks is used in dysentery.
13	*Cajanus cajan* (L.) Millsp.	Arhar	Fabaceae	Shrub	Root	Juice made from roots is used in diabetes.
14	*Carica papaya* L.	Papaya	Caricaceae	Shrub	Fruit	Ripe fruits are used in diarrhea.
15	*Centella asiatica* (L.) Urban	Thankuni	Apiaceae	Herb	Whole plant	Vegetable of whole plants are used in dysentery.
16	*Coccinia cordifolia* (L.) Cogn.	Telakucha	Cucurbitaceae	Climber	Leaf	Vegetable made from young leaves are used in diabetes and fever.
17	*Cocos nucifera* L.	Narikel	Arecaceae	Tree	Fruit	Green coconut water is commonly used as dehydrating agent in diarrhea.
18	*Dillenia indica* L.	Chalta	Dilleniaceae	Tree	Fruit	Fruit juice mixed with sugar and water is used as cooling beverage in fever.
19	*Erythrina variegata* L.	Madar	Fabaceae	Tree	Bark	Juice of bark is used in fever.
20	*Ficus racemosa* L.	Jogadumur	Moraceae	Tree	Fruit	Curry made from unripe fruit is used in diabetes.
21	*Glycosmis pentaphylla* Corr.	Datmajan	Rutaceae	Shrub	Fruit	Juice of ripe fruit is used in dysentery.
22	*Heliotropium indicum* L.	Hatisur	Boraginaceae	Herb	Leaf	Decoction of leaves is used in fever.
23	*Justicia adhatoda* Nees.	Basak	Acanthaceae	Herb	Leaf	Juice made from young leaves is used in cough.
24	*Kalanchoe pinnata* (Lamk.) Pers.	Patharkuchi	Crassulaceae	Herb	Leaf	Juice made from young leaves is used in diabetes, dysentery and cough.
25	*Leucas lavendulifolia* Sm.	Setadron	Lamiaceae	Herb	Leaf	Juice made from young leaves is used in fever.
26	*Mimosa pudica* L.	Lajjabati	Fabaceae	Climber	Root	Decoction of roots is used in fever.
27	*Momordica charantia* L.	Korola	Cucurbitaceae	Climber	Fruit	Curry made from unripe fruit is used as diabetes.
28	*Moringa oleifera* Lamk.	Sogina	Moringaceae	Tree	Root	Decoction of roots is used in fever.
29	*Oxalis corniculata* L.	Amrul	Oxalidaceae	Herb	Leaf	Vegetable made from young leaves are used in cough.
30	*Ocimum sanctum* L.	Tulsi	Lamiaceae	Herb	Leaf,root	Juice made from young leaves is used in cough. Juice of roots is used in fever.
31	*Phyllanthus emblica* L.	Amloki	Euphorbiaceae	Tree	Fruit	Ripe fruits are used in cough.
32	*Psidium guajava* (L.) Bat.	Piyara	Myrtaceae	Tree	Fruit, stem	Fruits are used in diarrhea. Juice made from the stem bark is used in blood dysentery.
33	*Punica granatum* L.	Dalim	Punicaceae	Shrub	Fruit	Ripe fruits are used in diarrhea. Immature fruit juice is used in dysentery.
34	*Rauvolfia serpentina* Benth.	Sarpagandha	Apocynaceae	Herb	Root	Decoction of roots is used in dysentery and diarrhea.
35	*Syzygium cumini* Skiel.	Kalojam	Myrtaceae	Tree	Seed, bark	Dry seed dust mixed with normal water used in diabetes. Paste made from the bark is used in dysentery.
36	*Vitex negundo* L.	Neshinda	Lamiaceae	Shrub	Root	Juice of roots is used in fever.

3. Results and Discussion

In the present survey, a total of 36 plant species belonging to 36 genera and 25 families were recorded Table 1. Out of these plants species, 13 (36.11%) belonged to herbs, 14 (38.88%) trees, 5 (13.88%) shrubs, and 4 (11.11%) climbers Table 1. For each species scientific name, local name, family, habit, mode of uses and part(s) used are provided. The most frequently used species for the treatment of cough, diabetes, diarrhea, dysentery and fever diseases are *Aegle marmelos*, *Alstonia scholaris*, *Andrographis paniculata*, *Allium cepa*, *Ananas comosus*, *Argemone Mexicana*, *Artocarpus heterophyllus*, *Averrhoa carambola*, *Bombax ceiba*, *Carica papaya*, *Centella asiatica*, *Dillenia indica*, *Erythrina variegata*, *Ficus racemosa*, *Justicia adhatoda*, *Mimosa pudica*, *Moringa oleifera*, *Ocimum sanctum*, *Phyllanthus emblica*, and *Vitex negundo.*

Use of plant parts as medicine shows variation Table 1. Fruits (33.33%) are the leading part used in a majority of medicinal plants followed by 27.77% root, 11.11% bark, 2.77% seed, 8.33% whole plant, 5.55% stem, 2.77% bulb and 22.22% leaf. Distribution of medicinal plant species in the families shows variation Table 1. Each of Fabaceae and Lamiaceae is represented by 3 species. A single species in each was recorded by 17 families while two species in each was recorded by 6 families. The survey has also recorded 5 categories of uses of 36 medicinal plants Table 1. This is the indication of rich knowledge of medicinal uses of plants by the Santals in the study area. Among them, 15 (41.66%) species were used to cure fever, 12 (33.33%) species for each of dysentery, 9 (25.00%) species for diabetes, 8 (22.22%) species for diarrhea and 6 (16.66%) species for cough. The survey indicated that the common medicinal plant families in the study area are Acanthaceae, Amaranthaceae, Apocynaceae, Annonaceae, Averrhoaceae, Apiaceae, Arecaceae, Bombacaceae, Bromeliaceae, Caricaceae, Cucurbitaceae, Euphorbiaceae, Fabaceae, Lamiaceae, Liliaceae, Moraceae and Rutaceae. This finding of common medicinal plant families in the study is in agreement with [6,28].

4. Conclusions

The present findings are the first record of ethno-botanical survey of traditional medicine Practice for the treatment of cough, diabetes, diarrhea, dysentery and fever of Santals at Abdullahpur Village under Akkelpur Upazilla of Joypurhat District, Bangladesh using standard research protocols. A total of 36 plant species under 36 genera of 25 families have been documented which are used for the treatment of 5 important human diseases. The present study may be a preliminary contribution to the medicinal knowledge of this area using standard research methods, focusing on medicinal plants and their local uses for the healthcare. This healthcare knowledge transmitted orally from one generation to generation. The study also suggested that the present information on medicinal plants by the Santals may be used for botanical and pharmacological research in future for the development of new sources of drugs.

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