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FOLK MEDICINAL PLANTS USED BY THE SANTAL TRIBAL PRACTITIONERS AGAINST DIARRHEA AND DYSENTERY IN TANORE UPAZILA OF RAJSHAHI DISTRICT, BANGLADESH

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ABSTRACT: This paper presented the traditional uses of 20 plant species belonging to 14 families that are used by the Santal tribal practitioners in Tanore upazila of Rajshahi district, Bangladesh for the treatment of diarrhea and dysentery diseases. During the study, interviews were conducted with the help of a semi-structured questionnaire and the guided field walks method. The medicinal plants traditionally used by Santal tribes were collected and preserved as herbarium specimens by following the standard methods. The identification of plants was further authenticated with the Herbarium, Department of Botany, Rajshahi University, Bangladesh. For each species scientific name, local name, family name, parts used and mode of uses were provided. All these plants need to be evaluated through phyto and pharmacochemical investigations to discover their potentiality and may help in developing effective drugs for human health care.

INTRODUCTION: In the present scenario, herbal medicines are highly considered owing to their inherent therapeutic potentials such as easy access, less possibility of adverse side effects and costs effective. WHO depicts that over 80% of world's population depends on biological resources for their primary healthcare demands²⁴. Most of the formulation of the traditional medicine system like Ayurveda and Siddha are composed of about 90% herbal products of whole plants or part of the plants such as stem, bark, root, root bark, rhizome, leaf, flower, fruits and seeds. In some extent secondary metabolites like resin, gum and latex have also been utilized as a drug¹. Plants have always formed an excellent source for modern drugs.

Bangladesh is rich in floral species and it has been estimated that more than 5,000 floral species exist within the country, which is small in size. Bangladesh also has a rich history of traditional medicinal practices like Ayurveda, Unani, Folk medicine, and home remedies, all of which utilize plants to a major extent for treatment¹⁰. Studies on ethnomedicinal and medicobotanical information in Bangladesh are at initial stage. Several ethno-medicinal studies in Bangladesh have been carried out by^{3, 4, 6, 8, 9, 12, 13, 14, 17, 21, 23, 25, 26, 27}. The present research was to first record of ethno-medicinal plants used against diarrhea and dysentery by the Santal tribal practitioners of Tanore Upazila of Rajshahi district, Bangladesh.

MATERIALS AND METHODS:

Study Area: Tanore is an upazila of Rajshahi district in the division of Rajshahi, Bangladesh. Tanore upazila area is 293.37 km² located in 30 km north-west position from Rajshahi district. It is bounded by Nachole upazila on the north-west, on the north Niamatpur, on the South Godagari, on the

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west Nawabganj sadar, on the north-east Manda and on the east Mahanpur Upazila. The climate of this area is generally tropical wet and dry climate, characterized by high temperatures, heavy monsoon, moderate rainfall and high humidity.

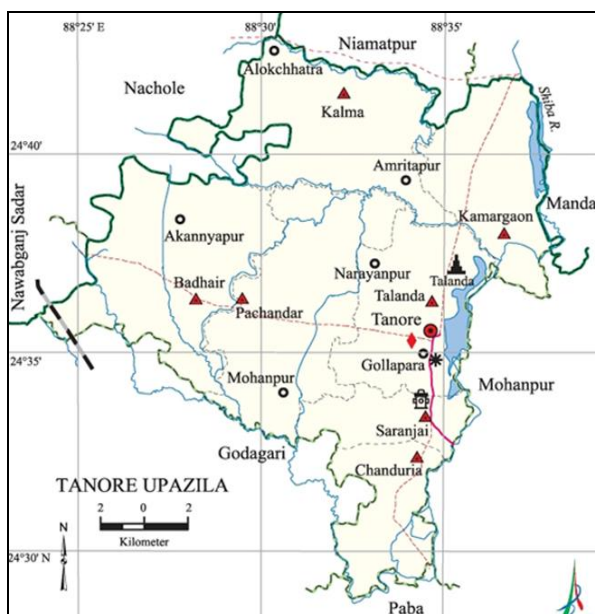


FIG. 1: MAP OF STUDY AREA

The hot season commences early in March and continues till the middle of July. The maximum mean temperature observed is about 32 to 36 °C during the months of April, May, June and July and the minimum temperature recorded in January is about 7 to 16 °C. The highest rainfall is observed during the months of monsoon. The annual rainfall in the district is about 1,407 millimeters⁷.

Data Collection: A total of nineteen field trips were made for the documentation during April 2016 to March 2017. During the field interview, the information was noted in the documentation data sheet. A total of 127 Santal people having an age range 24 - 73 years were interviewed using semi-structured interviewed method⁵. Professionally they were peasant, day labor, farmer, house wives, small shop keepers *etc.* Among them 58 were female and rest 69 were male. Regular field studies were made in the study area during the period. The information about the plants used for various diseases was gathered through interviews and discussion with the elderly people, medicine men and traditional medical practitioners were also consulted. Plant specimens were collected with flowers and fruits and processed using standard herbarium techniques⁵.



FIG. 2: INTERVIEW WITH SANTAL PEOPLE IN THE STUDY AREA

Plant Identification: The identification of plant specimens was achieved through the help of taxonomic experts and by comparison with the identified herbarium specimens and available literatures^{2, 11, 16, 20, 19}. The voucher specimens are deposited at the Herbarium, Department of Botany, Rajshahi University, Bangladesh for future.

RESULTS AND DISCUSSION: In the present study, a total of 20 plant species under 19 genera and 14 families have been identified as potential source for treating diarrhea and dysentery. The scientific names of the species along with families, local names, part(s) used, medicinal uses, doses and mode of preparation are recorded **Table 1**. Use of plant parts as medicine shows variation. Leaves 35.00% are the leading part used in a majority of medicinal plants followed by fruit 30.00%, root 20.00%, bark 10%, rhizome 5.00%, gum 5.00%, seed 5.00% and whole plant 5.00% **Fig. 3**.

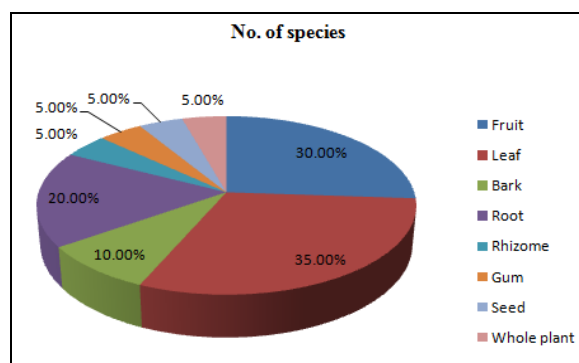


FIG. 3: RECORDED PLANT PARTS USED IN DIARRHEA AND DYSENTERY

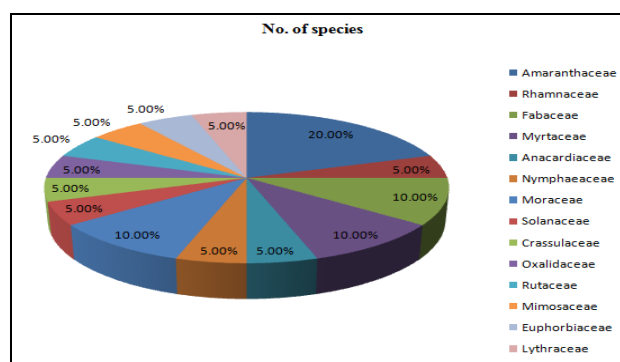


FIG. 4: RECORDED PLANT FAMILIES IN THE STUDY AREA

Distribution of medicinal plant species in the families shows variation. Amaranthaceae is represented by 4 species. Each of Fabaceae, Moraceae and Myrtaceae is represented by 2 species while a single species in each was recorded by 10 families **Table 1** and **Fig. 4**. The survey indicated that the common medicinal plant families in the study area are Amaranthaceae, Fabaceae, Moraceae, Myrtaceae, Euphorbiaceae, Lythraceae, Rutaceae, Solanaceae and Rhamnaceae. This finding of common medicinal plant families in the study is in agreement with ^{6, 8, 9, 12-15, 17, 18, 21-23, 25-27}.

TABLE 1: RECORDED PLANT SPECIES USED BY THE SANTALS FOR THE TREATMENT OF DIARRHEA AND DYSENTERY

S. no.	Scientific name	Local name	Family name	Parts used	Mode of uses
1	<i>Achyranthes aspera</i> L.	Apang	Amaranthaceae	Leaf, root	Decoction of both leaves and roots are used in dysentery
2	<i>Acacia nilotica</i> (L.) Del.	Babla	Mimosaceae	Fruit	Pods are prescribed in dysentery
3	<i>Aegle marmelos</i> (L.) Corr.	Bel	Rutaceae	Root	Root extracts 0.5 cup mixed with sugar 1 teaspoon and cow milk 3 teaspoon used against diarrhea and dysentery for children
4	<i>Amaranthus spinosus</i> L.	Kata notey	Amaranthaceae	Leaf	Leaves juice is used for dysentery
5	<i>Amaranthus viridis</i> L.	Shak notey	Amaranthaceae	Whole plant	Decoction is whole plant is used for diarrhea
6	<i>Artocarpus heterophyllus</i> Lamk.	Kanthal	Moraceae	Root	Decoction of roots is used for diarrhea
7	<i>Averrhoa carambola</i> L.	Kamranga	Oxalidaceae	Fruit	Decoction of fruits is taken orally to cure dysentery
8	<i>Bryophyllum pinnatum</i> (Lam.) Oken	Pathor kuchi	Crassulaceae	Leaf	Leaf juice is prescribed once daily 5-6 days for blood dysentery
9	<i>Capsicum frutescens</i> L.	Morich	Solanaceae	Fruit	Powder of dried fruit is made into paste with water and fried with hot rice is given in blood dysentery
10	<i>Celosia argentea</i> L.	Morogful	Amaranthaceae	Seed	Decoction of the seeds with sugar is prescribed against dysentery
11	<i>Dalbergia sissoo</i> Roxb.	Sisso	Fabaceae	Leaf	Decoction of leaves mixed with water orally treated twice a day for 3days
12	<i>Ficus racemosa</i> L.	Jagg dumur	Moraceae	Gum	Gum is used mixed with water for treatment of anti diarrheal disease
13	<i>Nymphaea nouchali</i> Burm. f.	Shapla	Nymphaeaceae	Rhizome	Firstly Rhizome dried in the sun light and then made it powder. The powder mixed with water and used for dysentery
14	<i>Psidium guajava</i> L.	Peara	Myrtaceae	Leaf, bark, root	For diarrhea boiled leaf decoction and stem bark is administered twice daily for a week. Root paste mixed with water is used to treat dysentery once daily for 5 days
15	<i>Phyllanthus reticulatus</i> Poir.	Shoti	Euphorbiaceae	Leaf	Leaves juice with water is taken orally for diarrhea of infants
16	<i>Punica granatum</i> L.	Dalim	Lythraceae	Fruit	The rind of the fruit and the bark of the pomegranate tree are used as a traditional remedy against diarrhea and dysentery
17	<i>Spondias pinnata</i> L.	Amra	Anacardiaceae	Bark	Infusion of the bark is given in dysentery and diarrhea
18	<i>Syzygium fruticosum</i> L.	Jongli Zaam.	Myrtaceae	Leaf	Juice of the tender leaves with rice water is taken in blood dysentery
19	<i>Tamarindus indica</i> L.	Tetul	Fabaceae	Fruit	Pulp of the ripe fruit is a household remedy for diarrhea and dysentery taken until cure
20	<i>Zizyphus mauritiana</i> Lamk.	Boroi	Rhamnaceae	Fruit	Grinding, decoction of fruits taken orally to cure infantile diarrhea once daily for 2-3 days

CONCLUSION: The present study contributed to the establishment of an inventory of plants used in

diarrhea and dysentery practices in the study area. Some useful species are under serious threat due to

unsustainable activities. Hence, a proper documentation of useful plants with their present status and local traditional knowledge as well as practices is urgently needed. Effort also is initiated to implement appropriate conservation measures for reservation and sustainable uses of these useful species. Future phytochemical and pharmacological studies are needed to confirm the efficacy and safety of the identified plants, enabling communities to use them in a more economic, effective and safe manner.

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CONFLICT OF INTEREST: The authors declare that there is no conflict of interests regarding the publication of this paper.

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