

Ethno-medicinal plants use by the *Manipuri* tribal community in Bangladesh

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Abstract: An ethno-medicinal investigation was conducted to understand the traditional knowledge of medicinal plants being used by the *Manipuri* tribe in Bangladesh. The present study was done through structured questionnaires in consultations with the tribal practitioners. A total 32 plant species belonging to 26 families and 29 genera were found to use for curing 37 ailments. Results show that the use of aboveground plant parts was higher (86%) than the underground plant parts (14%). Leaf was used in the majority of cases for medicinal preparation (17 species) followed by bark, fruit, root/rhizome, whole plant, seed and flower. Among the 32 plant species, they were mainly used to treat dysentery (10 species), followed by fever and rheumatism (5 species each); asthma, constipation, wounds and skin diseases (4 species each); cold ailments, cough and diarrhea (3 species each). The study revealed that 72% plant species investigated were used to cure more than one ailment. About 75% medicinal plants were taken orally followed by externally (9%) and both orally and externally (16%). The study thus underscores the potentials of the ethno-botanical research and the need for the documentation of indigenous healthcare knowledge pertaining to the medicinal plant utilization for the greater benefit of mankind.

Keywords: Bangladesh; indigenous healthcare practice; Manipur tribe; medicinal plants

Introduction

Documentation of traditional knowledge on ethnomedicinal use

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of plants has been considered as a high priority to support the discoveries of drugs benefiting mankind (Pieroni 2000; Dutta and Dutta 2005; Pradhan and Badola 2008). Tribal people are the ecosystem people who live in harmony with the nature and maintain a close link between man and environment (Sajem and Gosai 2006). The tribal populations, who have been the primary inhabitants of natural habitats, hold tremendous amount of traditional knowledge on the use of various biotic resources (Halim et al. 2000; Uniyalet et al. 2006), which may have greater importance to the on-going research and discoveries in the field. It is well acknowledged in literature (Kirtikar and Basu 2001; Pradhan and Badola 2008) that their age-old practices of using plants to cure numerous ailments have paved the way to further discovery of many life-saving drugs. The livelihoods of tribal and forest dwellers are mainly dependent on the forests, which have built up their socio-economic and cultural life (Shroff 1997). Foods, fodders, medicine and other forest products have made a traditional economy of the tribal communities of the world (Miah and Chowdhury 2003).

In Bangladesh, there are many marginalized tribal communities of different lifestyles and cultures. Anon (2002) recorded 45 tribes' lives in Bangladesh. From time immemorial, tribal people have traditionally and culturally used medicinal plants (MPs) (Rashid and Rashid 2002). Bangladesh is rich in floral diversity, most of which possesses medicinal properties. According to Kadir (1990) and Yusuf et al. (1994), about 5 000 plant species are found in Bangladesh, of which 1 000 are said to have medicinal qualities. The greater Sylhet region (Sylhet district, Moulvibazar district and Habiganj district and Sunamganj district) is inhabited by a number of tribes. *Manipuri* tribe is found in greater Sylhet region and their ethno-botanical knowledge is very rich. Trees are given worshipped or given very high magi co-religious value by the Métis as an integral part of the *Manipuri* tradition of nature worship (Singha 2004). There are about 25 000 *Manipuris* in Bangladesh. Out of them about 14 000 are in Maulvibazar district, 7 000 in Sylhet district and 4 000 in Habiganj district (BBS 2001). *Manipuri* tribe uses medicinal plants rather than allopathic and homeopathic treatments for their health care. Some plants like mango (*Mangifera indica*), wood

apple (*Aegle marmalos*), Bermuda or 'durva' grass (*Cynodon dactylon*) and sacred basil (*Ocimum sanctum*) are either worshipped or used in religious rituals by the *Manipuri* tribe (Singha 2004). Traditionally, tribal communities worldwide are knowledgeable about the local plants and other natural resources on which they are immediately dependent (Khisa 1998). Indigenous knowledge (IK) plays a central role in disease diagnosis and healthcare practices in traditional medication systems (Chowdhury et al. 2009).

Tribal communities use surrounding plants for their primary healthcare along with other necessities, which are based on their traditional knowledge and dynamic cultural heritage. Use of 52 medicinal plants by the *Khasia* tribes of Sylhet (Rahman 1997); 76 species by the *Marma* tribe of the Chittagong Hill Tracts (Alam 1992) and 39 species by the *Mro* tribe of Bandarban (Miah and Chowdhury 2003) in Bangladesh are such certain examples. Various ethno-medicinal researches have been conducted on various tribes of Chittagong Hill Tracts, Bangladesh (Siddiqi 1998; Khisa 1998; Sattar 1998; Banik 1998; Alam and Khisa 2000; Haque 2000a; Haque 2000b; Mustafa et al. 2002; Alam 2002; Mohiuddin et al. 2002). But no study has been conducted on indigenous healthcare practice of *Manipuri* tribe. Thus it is urgently needed to explore their perception and indigenous healthcare practice about medicinal plants. The study was undertaken to ascertain those in Sylhet region, Bangladesh. Its aim was to assess plant-based ethno-medicinal practice and document IK associated with it.

Methodology

Study area

The study was conducted during July–December 2008 at Badaler gaon and Jhaper gaon villages of Madhobpur union (a rural administrative unit consists of a number of villages) of the kamalganj upazila (sub-district) under the Maulvibazar district, Bangladesh (Fig. 1). The total area of Kamalganj upazila consists of 48 526 ha, including forest area of 8 202 ha, and it is bounded by Maulvibazar Sadar and Rajnagar upazilas on the north, Tripura (India) on the south, Kulaura and Tripura (India) on the east, Sreemangal and Maulvibazar Sadar on the west. It lies between 24°08' and 24°28' north latitudes and between 91°46' and 91°57' east longitudes. About 23% area of the upazila is hilly (BBS 2001). The upazila is constituted with three topographical regions i.e. hilly region, valley alluvium soil region and surma-kushiare alluvium soil region. The total arable land is 22 672 ha, non-agricultural land 8 748 ha, fallow land 506 ha and khash land 787.44 ha. The soil of this upazilla is generally sandy-loam soil. One of the richest semi-evergreen hill forests of Bangladesh is located in this region. This forest is dominated by tree species, including *Terminalia arjuna*, *Terminalia belerica*, *Azadirachta indica*, *Artocarpus chaplasha*, *Tetramefes nudiflora*, *Pterygota alata*, *Dipterocarpus spp.*, *Swintonia floribunda*, *Anthocephalus chinensis*, *Trewia nudiflora*, and *Lagerstroemia speciosa* (Ahmed et al. 2008).

Methods

Out of seven upazilas of Maulvibazar district, the *Manipuri* tribe mainly concentrates in the hilly areas Kamalganj upazila. Madhobpur union of Kamalganj upazila was inhabited mostly by the *Manipuri* tribe. Therefore this union was selected purposively. A list of the *Manipuri* hamlets was collected. Six hamlets were finally selected at random from the list for the study. From each of the six hamlets, 10 households were selected randomly. Thus, a total of 60 households were selected from the study area. They were interviewed using a structured questionnaire to ascertain the plant species and the parts used, for what diseases, the sources they prefer, the reasons for cultivating any plant and the eagerness of the younger generation in this regard. The plant species used for medicine were firstly identified by local names. The scientific names were obtained by consulting the literature (BARC 1972–1992, Chopra et al. 1992, Chevillier 1996, Das and Alam 2001). A final list of the species used for medicinal purposes was prepared based on the study by Dey (2006). The methods of utilization of plant species were obtained from skilled and experienced older members of the tribal community.

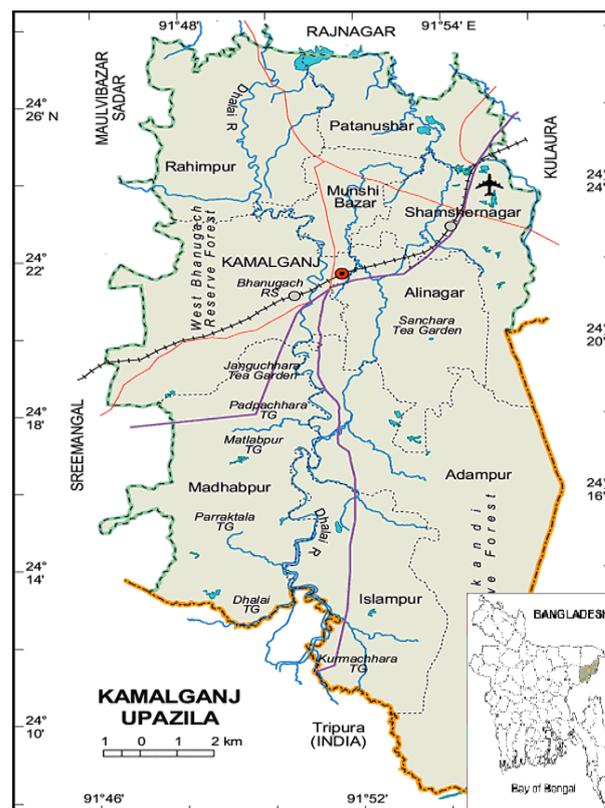


Fig. 1 Location map of the study area

Results and discussion

A total 32 ethno-medicinal plant species, including herb, shrub, tree and climber distributed across 26 families and 29 genera, were documented in the study to be used by the *Manipuri* tribe

for curing different ailments (Table 1). The result revealed that the trees were dominant (50%) followed by shrubs (22%), herbs (22%) and climbers (6%) (Fig. 2). A similar trend was also ob-

served by Uddin (2008); Mukul et al. (2007); Miah and Chowdhury (2003), but Halim et al. (2007) and Ghani (2003) found herbs were dominated in the observed plant species.

Table 1. Medicinal plant species and their traditional uses by the Manipuri tribal community in the Maulvibazar district, Bangladesh

Sl. No.	Family	Local name	Scientific name	Parts used	Habit	Occurrence
1	Acanthaceae	Basak	<i>Adhatoda vasica</i> Nees	Fresh green leaves	Shrub	Common
2	Apiaceae	Thankuni / Adamoni	<i>Centella asiatica</i> (L.) Urban	Fresh green leaves	Herb	Common
3	Apocynaceae	Chatim	<i>Alstonia scholaris</i> (L.) R. Br.	Bark	Tree	Fairly common
4		Sarpaganda	<i>Rauwolfia serpentina</i> Benth.	Root	Herb	Common
5	Araceae	Monkachu / Harinpaya	<i>Alocasia indica</i> (Lour.) Spach.	Root and leaves	Herb	Fairly common
6	Areaceae	Narikel	<i>Cocos nucifera</i> L.	Root and fruit	Tree	Common
7	Asteraceae	Assamlata / Uzaru	<i>Chromolaena odorata</i> (L.)	Green leaves	Herb	Fairly common
			King & H.E. Robins			
8		Arjun	<i>Terminalia arjuna</i> W & A	Bark	Tree	Common
9	Combretaceae	Bohera	<i>Terminalia belerica</i> Roxb.	Fruit	Tree	Common
10		Horitaki	<i>Terminalia chebula</i> (Gaertn.) R etz.	Fruit	Tree	Rare
11	Convolvulaceae	Donkalos / Dolkolmi	<i>Ipomoea fistulosa</i> Roxb.	Whole plant	Shrub	Fairly common
12	Cucurbitaceae	Talakucha	<i>Coccinea cordifolia</i> Linn.	Leaves and roots	Climber	Fairly common
13	Fabaceae	Banar lathi / Sonalu	<i>Cassia fistula</i> Linn.	Fruit and leaves	Tree	Fairly common
14	Flacourtiaceae	Chalmugra	<i>Hydnocarpus Kurzii</i> King.	Seed oil	Tree	Rare
15	Labiatae	Tulsi	<i>Ocimum sanctum</i> L.	Leaves	Shrub	Fairly common
16	Lauraceae	Huoria / Menda	<i>Litsea monopetala</i> (Roxb.) Pers.	Fresh green leaves	Tree	Common
17	Leguminosae	Lajjabati	<i>Mimosa pudica</i> L.	Whole plant	Herb	Fairly common
18	Lythraceae	Jarul	<i>Lagerstroemia speciosa</i> (Linn.) Pers.	Leaves and barks	Tree	Common
19	Magnoliaceae	Champa	<i>Michelia champaca</i> Linn.	Bark, bark of roots,	Tree	Common
20	Melastomataceae	Lutki / Tea indicator	<i>Melastoma malabathicum</i> Linn.	Leaves and flower	Shrub	Common
21			Neem	<i>Azadirachta indica</i> Adr.	Fresh green leaves and	Tree
	Meliaceae	Juss.	Seed			
22		Bokain	<i>Melia azedarach</i> Linn.	Green leaves	Tree	Rare
23	Moraceae	Kanthal	<i>Artocarpus heterophyllus</i> LamK.	Leaves and bark	Tree	Common
24	Orchidaceae	Kuntus pata	<i>Cymbidium aloifolium</i> (L.) Sw.	Leaves	Herb	Fairly common
25	Pandanaceae	Keya	<i>Pandanus tectorius</i> Soland.	Fresh green leaves	Shrub	Fairly common
26	Piperaceae	Paan	<i>Piper betel</i> Linn.	Fresh green leaves	Climber	Common
27		Mehedi	<i>Lawsonia inermis</i> Linn.	Leave, bark	Tree	Rare
28	Poaceae	Durba ghass	<i>Cynodon dactylon</i> (L.) Pers.	Whole plant	Herb	Fairly common
29	Rubiaceae	Monkata	<i>Randia dumetorum</i> Lamk.	Fruit	Shrub	Rare
30		Kadam	<i>Anthocephalus chinensis</i> Miq.	Leaves	Tree	Common
31	Rutaceae	Lebu	<i>Citrus limon</i> (Linn.) Burm. f.	Fruit, root	Shrub	Common
32	Thymelaeaceae	Agor	<i>Aquilaria agallocha</i> Roxb.	Bark	Tree	Common



Fig. 2 Habit wise distribution of medicinal plants used by Manipuri tribe

For the utilization frequency of the plant species, Combretaceae appears as the most prominent family (3 species, 1 genera), followed by Apocynaceae, Piperaceae and Rubiaceae (2 species and 2 genera each), and Meliaceae (2 species, 1 genera). Rests are the family that contains one species each. Uddin et al. (2008) and Mukul et al. (2007) also recorded that the species under these families are frequently used as medicinal plants. But *Leguminosae* is the dominant family within the *Shiji* community in South-Western Bangladesh (Halim et al. 2007).

Due to inaccessibility to modern medical facilities, *Manipuri* tribe is highly (78%) dependent on herbal medicine. The medicine is generally prepared by an indigenous medical practitioner, called *Kabiraj*, from the plants available in the natural forest and

the homestead forest. Then he will give various prescriptions to the community members. It is noteworthy that the homestead forest is common in Bangladesh, containing a mixture of natural and planted species in a complex structure and being a source of economic-benefit of the rural poor (e.g. see. Ahmed et al. 2008). Due to mostly dependence on herbal treatment and long-term uses, not only the *Kabiraj*, but also elder community members have become to have a good knowledge of the medicinal value of some plants, which those species are usually used to treat common diseases such as cough, cold ailments, cut and wounds. In case of medicinal plant sources, *Manipuri* tribe preferred wild sources like natural forest, village groves, jungles, graveyards, roadside area and pond bank rather than planted sources (plantation in any site where regeneration is artificial) for collection of medicinal plants. They believe that wildy collected medical plants are more effective than planted sources. Halim et al. (2007), who conducted study on *Shaiji* community in South-Western Bangladesh also found a similar result. In Bangladesh, 90% of medicinal plants are found growing wild (Anonymous 2005).

Table 2. Utilization of aboveground plant parts of the medicinal plant species in Manipuri tribal community, Bangladesh

Plant parts use	Species number*
Leaves	17 (41)
Fruit	6 (14)
Whole plant	3 (7)
Seed	2 (5)
Root/Rhizome	6 (14)
Bark	7 (17)
Flower	1 (2)

*Parenthesis shows the percentage value

The total 32 medicinal plant species recorded from *Manipuri* tribal community are used to cure about 37 ailments. These plant species were mainly used to treat dysentery (10 species), followed by fever and rheumatism (5 species each); asthma, constipation, wounds and skin diseases (4 species each); cold ailments, cough and diarrhea (3 species each) (Fig. 3). Miah and Chowdhury (2003) recorded nine species used in dysentery treatment in *Mro* tribe of Bangladesh. Pradhan and Badola (2008) found similar result in a study on *Lepcha* tribe in India, whereas Mukul et al. (2007) found highest nine species were used against cold ailments in a conservation area of Northern Bangladesh and Muthu et al. (2006) found 16 species were used against wounds in Tamil Nadu, India. For curing ailments, the use of aboveground plant parts was higher (86%) than the underground plant parts (14%). Out of the aboveground plant parts, leaf was used in the majority of cases (17 species), followed by bark (7 species), fruits (6 species) (Table 2). A similar trend was also observed by Mukul (2007) in a study on a conservation area of Northern Bangladesh, by Halim et al. (2007) on the *Shaiji* community in South-Western Bangladesh, and by Sajem and Gosai (2006) in Northeast India. But Anonymous (2005) reported that root is mostly used when using medicinal plant parts that are wildy harvested. This makes the sustainable harvesting of medicinal

plants difficult. In this study, *Manipuri* used mostly leaves. This ensures sustainable harvesting of medicinal plants. It provides an incentive to protect and maintain wild populations and their habitats and the genetic diversity of medicinal plants (Schippmann et al. 2002). The whole plants of the three species viz. *Ipomoea fistulosa*, *Mimosa pudica*, *Cynodon dactylon* were used as medicine in the study area.

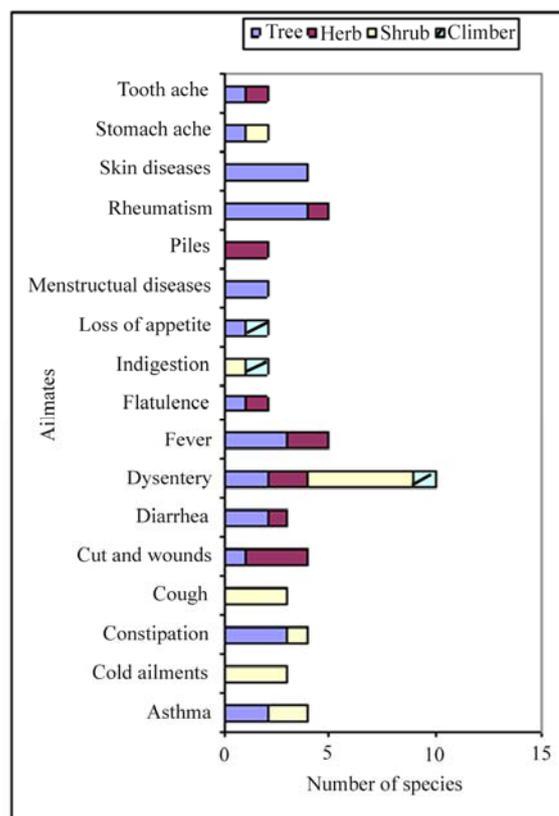


Fig. 3 Different ailments cured using the plant species in Manipuri tribe, Bangladesh

The indigenous knowledge regarding utilization patterns of medicinal plants are shown in Table 3. The use of *Adhatoda vasica* for treatment of cough and dysentery was found in the study area. In addition, *Centella asiatica* is used against flatulence, dysentery and bleeding of piles (Fig. 4) and *Mimosa pudica* is also reported for piles and dysentery in the study area (Fig. 5). The use of *Ocimum sanctum* against asthma, cough, cold ailment, stomach ache and dysentery were recorded in the study area. *O. sanctum* has a long Bangladeshi history of bearing an antitussive property but its analgesic use has never been reported earlier. The same use of *A. vasica* were also found by Uddin et al. (2008), Mukul et al. (2007), Miah and Chowdhury (2003) in Bangladesh, and by Sajem and Gosai (2006) in *Jaintia* tribes in Northeast India. The same function of *C. asiatica* has also been recorded by Miah and Chowdhury (2003) and Mukul et al. (2007) in Bangladesh. Moreover, the use of *C. asiatica* against conjunctives, eye injury, stomachic, indigestion and flatulence was also reported by Sajem and Gosai (2006) in Northeast India. The

same use of *M. pudica* was also found in North-Eastern region of Bangladesh (Uddin et al. 2008) and *Jaintia* tribes in Northeast India (Sajem and Gosai 2006) but it is used against fever (Rahman et al. 2008), scabies in *Mro* tribe Bangladesh (Miah and Chowdhury 2003). Similar use of *O. sanctum* found in a conservation area of Northern Bangladesh (Mukul et al. 2007) but it is used against head ache reported in India (Grover et al. 2002; Kar et al. 2003; Sajem and Gosai 2006). Some other species were used frequently against various ailments by the *Manipuri* tribal community. These species involve in *Azadirachta indica* (Kar et

al. 2003; Chattopadhyay 1999; Miah and Chowdhury 2003; Uddin et al. 2008; Mukul et al. 2007; Chowdhury et al. 2009); *Alstonia scholaris* (Uddin et al. 2008; Sajem and Gosai 2006); *Terminalia arjuna* (Rahman et al. 2008; Miah and Chowdhury, 2003; Mukul et al. 2007); *Litsea monopetala* (Miah and Chowdhury 2003; Mukul et al. 2007); *Aquilaria agallocha*, *Citrus limon*, *Anthocephalus chinensis*, *Randia dumetorum*, *Lawsonia inermis* (Uddin et al. 2008); *Artocarpus heterophyllus*, *Melastoma malabathicum*, *Rauwolfia serpentina* (Partha and Hossain 2007).



Fig. 4 *Centella asiatica* (L.) Urban. Fresh green leaves are used to cure flatulence, dysentery and bleeding of piles, and grow in homestead area.



Fig. 5 *Mimosa pudica* L. Whole plant are used to cure piles and dysentery, and grow in homestead area.

Table 3. Using patterns of medicinal plants with their traditional uses by the *Manipuri* tribe in Bangladesh

Scientific name	Traditional uses	Using patterns
<i>Adhatoda vasica</i> Nees	Cough, asthma, phthisis, dysentery and malaria	Fresh green leaves are boiled in water and decoction is prepared with small slice of zinger, which is consumed twice in a day.
<i>Centella asiatica</i> (L.) Urban	Flatulence, dysentery and bleeding of piles	Decoction of leaves is used bleeding of piles. Crushed fresh green leaves are mixed with a tablespoon of honey and taken twice daily for dysentery and flatulence.
<i>Alstonia scholaris</i> (L.)	Dysentery, constipation, fever and asthma	Fresh bark are cut into small pieces and decoction is prepared which is later filtered through a cloth and dried in shade, small pills (each of 0.5-1gm) are made, two pills a day are taken orally for curing dysentery and asthma.
<i>Rauwolfia serpentina</i> Benth.	Blood pressure, diarrhea and fever	Roots are boiled in water and decoction is prepared which is taken thrice a day to cure diarrhea and fever. Juice made from roots is used also in blood pressure.
<i>Alocasia indica</i> (Lour.) Spach.	Rheumatism and fever	Two or three teaspoonfuls of juice obtained from leaves and roots are taken directly.
<i>Cocos nucifera</i> L.	Cholera, diarrhea, dysentery, diuretic and menstrual diseases	Water of tender fruit is cooling refrigerant and commonly used as dehydrating agent in cholera, diarrhea and dysentery. Juice of roots is used in diuretic and menstrual disease.
<i>Chromolaena odorata</i> (L.)	Cut and wounds	The leaves are ground well to make juice that is externally used on the cut injury.
<i>Terminalia arjuna</i> W & A	Heart disease	Barks (50 g) are crushed well and decoction is prepared which is mixed with sugar (2 milligram) and milk (150 ml) is drunk in every morning for curing heart disease.

Continued Table 3

Scientific name	Traditional uses	Using patterns
<i>Terminalia bellerica</i> Roxb.	Constipation, flatulence, loss of appetite, stomach ache and diarrhea	Dried fruit are powdered and taken orally to cure stomachache. The fruits are also soaked in water and the decanting water is then drunk with one teaspoonfuls honey to cure against constipation, flatulence and loss of appetite.
<i>Terminalia chebula</i> (Gaertn.) R etz.	Asthma, anemia, rheumatism and tooth ache	Ripen fruits are used against asthma, anemia and rheumatism. The grinding power of fruit is also used against toothache.
<i>Ipomoea fistulosa</i> Roxb.	Cold ailments	The whole plant is grounded well and the decoction is drunk orally to cure against cold ailments.
<i>Coccinea cordifolia</i> Linn.	Diabetes	The juice (two or three teaspoonfuls) obtained from leaves and roots is taken at every morning and evening after boiling to cure against diabetes.
<i>Cassia fistula</i> Linn.	Constipation and rheumatism	Fresh green leaves and dried fruit are grounded well to make juice that is taken two times in a day regularly.
<i>Hydnocarpus Kurzii</i> King.	Leprosy and skin diseases	Oil obtained from ground seed is used against leprosy and skin diseases for message the body
<i>Ocimum sanctum</i> L.	Asthma, cough, cold ailment, stomachache and dysentery	Leaves (150 gm) are crushed to make juice (10 ml) which is mixed with honey (one teaspoonful) and zinger is taken twice a day for curing asthma, cough, cold ailment, stomach ache and dysentery.
<i>Litsea monopetala</i> (Roxb.) Pers.	Diarrhea	Fresh green leaves (150 gm) are crushed and are letter filtered 15 ml of the extract is taken thrice in a day to cure diarrhea.
<i>Mimosa pudica</i> L.	Piles and dysentery	After grinding well whole plants (400 gm) are soaked in water (400 ml); 80 ml of the extract mixed with sugar (two teaspoonfuls) is taken twice a day for curing piles and dysentery
<i>Lagerstroemia speciosa</i> (Linn.) Pers.	Fever and urinary diseases.	The juice obtained from leaves and bark is taken orally to cure fever and urinary diseases.
<i>Michelia champaca</i> Linn.	Fever and rheumatism	The barks and barks of roots are grounded well and mixed with water, and strained; the concoction is fed to patients suffering from high fever and rheumatism, which believed to restore health or brings down fever.
<i>Melastoma malabathicum</i> Linn.	Dysentery and leucorrhoea	2 ml of juice obtained from leaves and flower are taken daily with two teaspoons of honey by women to cure leucorrhoea. The juice obtained from leaves also used against dysentery.
<i>Azadirachta indica</i> Juss.	Adr. Skin diseases and worm	Leaf paste is applied topically on the body to treat skin diseases. The young twigs are used as toothbrush to develop strong teeth. Juice made from young leaves mixed with excess water of boil rice is used against worm.
<i>Melia azedarach</i> Linn.	Skin diseases	Juice or paste of crushed leaves is applied externally to cure skin diseases.
<i>Artocarpus heterophyllus</i> Lam K.	Wound, itches and menstrual diseases	Crushed leaves are used directly on wounds. Fresh barks (10-15 gm) are cut into small pieces and decoction is prepared which is mixed with turmeric (2-4 gm) to make pills which is taken by women thrice a day to cure menstrual diseases.
<i>Cymbidium aloifolium</i> (L.) Sw.	Cut and wounds	The juice obtained from leaves placed directly over the injured body.
<i>Pandanus tectorius</i> Soland.	Constipation, cold ailment and chicken pox	Leaves are ground and the extract is taken twice daily to cure against constipation, chicken pox and cold ailments.
<i>Piper betel</i> Linn.	Dysentery, loss of appetite, indigestion, and belly ache	Leaf is directly taken with mixer of lime (1-2 ml) and betel nut (3-4 ml) by women (mainly) in every day. They take it as their daily habit.
<i>Lawsonia inermis</i> Linn.	Dandruff, skin diseases, jaundice and spleen	Paste made from leaves is used against dandruff and skin diseases. Juice obtained from bark used to cure jaundice and spleen.
<i>Cynodon dactylon</i> (L.) Pers.	Cut and wound, tooth ache	The leaves are squeezed. After decanting the juice of leaves used externally on the cut and wounds. Fresh clean leaves along with slight salt are crushed with teeth to cure against toothache.
<i>Randia dumetorum</i> Lamk.	Cough, vomiting and dysentery	Fruit is taken directly to cure against cough, vomiting and dysentery.
<i>Anthocephalus chinensis</i> Miq.	Ulcer	The decoction made from leaves is used against mouth ulcer.
<i>Citrus limon</i> (Linn.) Burm. f.	Indigestion and dysentery	Fruit is good for indigestion. Chewing dried fruit skin helps preventing dysentery. Roots are tied together along with a copper coin and placed in women's naval during child birth, which is believed to expedite the expulsion of the placenta after child birth.
<i>Aquilaria agallocha</i> Roxb.	Rheumatism	Resinous substances that obtained from bark are taken orally thrice a day to cure rheumatism.

The study reveals that 72% plant species reported have been used to cure more than one ailment. External applications and internal consumption are involved in the treatment of diseases. Analysis of species level data discovered that the oral (75 %), external application (9%), and the combination of the two ways (16%) are used as major administration route of ethnomedicine. Mukul et al. (2007) found that 68.5% medicinal plants (MPs) were taken orally in a conservation area of Bangladesh. The same trend was also found by Halim et al. (2007), Miah and Chowdhury (2003), Rahman et al. (2008), Partha and Hossain (2007), Uddin et al. (2008) in Bangladesh and by Sajem and Gosai (2006), Muthu et al. (2006) in India. It was observed that most of the preparations include part of a species rather than combination of two or more species. Moreover, different parts of a species are usually used to cure different diseases.

Conclusion

The results indicate that plenty of medicinal plants are found in the study area and used by the traditional ways to treat a wide spectrum of human ailments. Further work should focus on the thorough phytochemical investigation such as alkaloid extraction and isolation along with few clinical trials. This could help in creating mass awareness regarding the need for conservation of such plants and also in promoting ethno-medico-botany knowledge within the region. This also contributes to the preservation and enrichment of the gene bank of such economically important species before they are lost forever. While there is issue on the conservation of biological diversity all over the world, *Manipuri* tribe is using plants for their health care in a sustainable manner. They cultivate rare plants and ultimately have developed arboretum for plants conservation. For a complete understanding of the traditional medicinal knowledge of the *Manipuri* tribe, chemical analysis of the respective plant parts should be undertaken more frequently.

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