

## **Ethnomedicinal Study of Plants in Hathazari, Chittagong, Bangladesh**

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### **ABSTRACT**

An ethnomedicinal survey of the rural community, mainly Chakma from Hathazari, Bangladesh, was conducted from May 2010 to January 2013. The methods used for ethnomedicinal data collection were field interviews, plant interview and group interview techniques. Local (Bangla) names, habit, parts used, mode of preparation and medicinal uses of plants were recorded by interviewing the locals of different age groups (mostly between 25 to 75 years) and also herbal practitioners (Kabiraj). A total of 75 plant species consisting of 67 genera categorised under 44 families were documented for the treatment of 35 ailments. Among the total documented species were herbs (41%), shrubs (19%), trees (28%) and climbers (12%). The most encountered medicinal plant families are Asteraceae, Lamiaceae, Rutaceae, Solanaceae, Liliaceae, Malvaceae, Combretaceae and Amaranthaceae. Analysis of the parts used showed that leaves are mostly used in majority of medicinal plants, followed by roots, fruit, stems, bark, rhizome, flowers, bulbs, seeds, thorns and latex. The most common preparations include juice, paste and extract. The present investigation was the first attempt undertaken in Hathazari to document the traditional uses of plants for the treatment of different ailments. This study also recorded new ethnomedicinal information. It can be concluded that data collected in the present study will be useful for any future ethno-pharmacological research for the discovery of new drugs.

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### **INTRODUCTION**

Plants have been used as medicinal plants for human welfare in healing ailments as drugs and natural therapies since long ago in Bangladesh. Medicinal plants play a

significant role in primary health care service of rural people (Roy *et al.*, 2008; Mohiuddin *et al.*, 2012). They are considered one of the crucial components as far as the contribution of biodiversity to society is concerned. Indigenous knowledge of herbal medicine for the cure of several types of diseases exists among different rural communities of Bangladesh (Rahman *et al.*, 2007). Bangladesh, a country of a very fertile land, has a rich flora of medicinal plants. A total of 4939 angiosperm plant species are scattered throughout the forests, jungles, hills, plains, crop fields, road-sides, gardens, marshy lands and watery places of Bangladesh, out of which 750 species are used in traditional medicine (Pasha & Uddin, 2013; Uddin, 2010). Tropical forests contain more than half of the world's estimated 500,000 plant species and less than 1% of these plants have been researched for medicinal activity (Conte, 1996). Tropical rainforest of Suriname contains 400 medicinal plants (Andel & Ruyschaert, 2011). Traditional practitioners of India use about 6000 plants as traditional medicine ([http://crdd.osdd.net/indipedia/index.php/Medicinal\\_plants\\_of\\_India](http://crdd.osdd.net/indipedia/index.php/Medicinal_plants_of_India)). More than 10% of the species from the national flora of Pakistan and Nepal are used for traditional medicine, with 2000 and 701 species, respectively (Chomchalow & Henle, 1995; DPR, 2007). Meanwhile, Sri-Lanka uses 40% plants of their native plants as medicinal (Chomchalow & Henle, 1995). Almost 50% of the medicines are derived from plants and 25% of the prescription drugs have their genesis of tropical plants (Haq, 2004). Malaysia has

about 15,000 species of flowering plants, of which about 10% are said to be medicinal (Faridah Hanum *et al.*, 2001). The World Health Organization (WHO) listed 21,000 medicinal plants that were used in different parts of the world. WHO reported that 80% of the world's population still depend on traditional medicine for their primary health care needs (Islam, 2006).

The rural community of Hathazari gathered the knowledge about plant used for the treatment from their environment through observations, intuition, experimentation and enriched the knowledge through selection and rejection, and passed it from generation to generation through various channels. Hathazari is one of the well-known upazila in the Chittagong district of Bangladesh, located at 22°24' - 22°38' N and 91°41' - 91°54' E, with an area of 246.32sq km, bounded by Fatik chhari upazila in the north, Panchlaish and Chandgaon thanas in the south, Raozan upazila in the east, and Sitakunda upazila in the west (Sajahan, 2012). The total population of Hathazari is about 0.4 million, out of which, 402 families are Chakma. According to Patwari (2012), the main occupations of the people are agriculture (14.65%), agricultural labourer (7.73%), wage labourer (2.6%), commerce and industry (17.88%), transport (4.68%), service (27.16%) and others (19.4%).

A number of ethno-medicinal studies in Bangladesh have been carried by Rahman *et al.* (2007), Yusuf *et al.* (2006, 2007), Roy *et al.* (2008), Faruque and Uddin (2011), Mohiuddin *et al.* (2012), Uddin *et al.* (2006, 2011, 2012), as well as Sajib and

Uddin (2013), who are from the Chakma community of hill tract districts, Rangamati district, Tripura Community of Hazarikhil, Bandarban district, Phulbari of Dinajpur district, Subarnachar of Noakhali, Lawachara and Sandwip Island of Chittagong district. However, no specific work has been done on the medicinal plants for the rural community of Hathazari. The present study intends to document the information on the plants used for medicinal purposes at Hathazari.

## MATERIALS AND METHODS

Documentation of the uses of medicinal plants as ethnomedicinal data sheet was done through field interview, plant interview and group interview techniques (Alexiades, 1996; Alcorn, 1984; Boom, 1978) carried out between May 2010 and January 2013 in the study area. Ten field trips were made in different flowering seasons and 60 interviews were conducted among 20 local informants. Field interview is also referred to as bagging interview (Alcorn, 1984); it consists of walking in one or more vegetation zones with an informant, collecting and taking notes on plants and their uses. Meanwhile, plant interview refers to the plants that have been collected and brought back and presented to the informants for their information (Alcorn, 1984; Boom, 1978). In addition, audio recordings were also done using a digital voice recorder. The authenticity of the information on each plant was confirmed through repeated interviews. Ethnomedicinal information was also obtained through informal interviews following semi-structured and structured

techniques. The interviews were conducted among the locals of different age groups, mostly between 25 to 75 years, including herbal practitioners (Kabiraj). The interviews focused on basic questions concerning the informant's knowledge of the uses of local plants. A typical question would be: which local plants do you know and/or use? How many people in your area use the plant as medicine? Depending on the response, more specific questions concerning the uses of plants were gradually formulated. In order to help assure that the information is as unbiased as possible, efforts were made to avoid the presence of other people during the interviews. Participant observation was used to enrich the information gathered. All the information regarding plant species, habit, family, local names and mode of application was documented. Voucher specimens were preserved, examined and identified in the laboratory of Chittagong University Herbarium (CTGUH). In some cases, standard literatures such as Heinig (1925), Ghani (1998), Siddiqui *et al.* (2007), Yusuf *et al.* (2009), Ahmed *et al.* (2008, 2009), Pasha and Uddin (2013) were also referred to for identification of species. On the other hand, world wide website, Catalogue of Life (2012) and the Plant List (2010) were also taken into consideration for the identification and recent nomenclature of all the specimens.

## RESULTS AND DISCUSSION

In the present ethno-medico-botanical survey, a total of 75 species under 67 genera of 44 families which are used for



Fig. 1: Map of the study area

the treatment of 35 types of ailments were documented. For each species, botanical name, family, local name (Bangla name), habit, and mode of application are identified and presented in Table 1. The survey indicated that the common medicinal plant families in the study area are Asteraceae, Lamiaceae, Rutaceae, Solanaceae, Liliaceae, Malvaceae, Combretaceae, Amaranthaceae, Acanthaceae, Anacardiaceae, Apiaceae, Apocynaceae, Euphorbiaceae,

Menispermaceae, Mimosaceae, Moraceae, Piperaceae, Verbenaceae and Zingiberaceae. This finding of common medicinal plant families in the study is in agreement with that of Ghani (1998) and Yusuf *et al.* (2009). Among the recorded species, herbs (41%) were found to be dominating over trees (28%), shrubs (19%) and climbers (12%). Meanwhile, analysis of the plant's parts used showed that leaves are the mostly used plant parts (43%), followed

by roots (14%), fruit (11%), stems (9%), bark (6%), rhizomes (5%), flowers (4%), bulbs (4%), seeds (2%), thorns (1%) and latex (1%). It is important to highlight that such a wide harvesting of leaves and seeds, compared to roots which are important for survival of plants, has a less negative influence on the survival and continuity of useful medicinal plants and hence does not affect sustainable utilisation of the plants (Yirga, 2010). Cutting off roots, bulbs and rhizomes is considered a destructive way or unsustainable exploitation of using plants because the whole plants are destroyed or uprooted in the process. The most frequently cited modes of plant used are as juice (36%), raw (22%), paste (14%), extract (8%), infusion (7%), syrup (5%), powder (3%), bath (3%), decoction (1%) and tablet (1%). In preparing plants into herbal medicine, parts are turned in the form of extract or paste by mixing them in a variety of food, spices or oil. Both external and internal methods of application of herbal medicine have been prescribed. In most cases, the community was found to practice oral application of herbal medicine. In most cases, local herbalists prescribed fresh plant materials as a source of herbal medicine. Most times, they do not store the herbal preparation. Plants are mostly used for the treatment of various types of pain (11), cough (10), rheumatism (10), fever (6), jaundice (5), dysentery (4), skin disease (4), haemorrhages (4), tiredness (4), digestive (3), sexual weakness (3), hair tonic (3), diarrhoea (2), gastritis (2), high blood pressure (2), diabetes (1), heart

disease (1), fracture (1) and other illnesses (11). Plants which are used in different parts of the world for the treatment of similar diseases may be considered to be pharmacologically efficient. The most commonly used plant species in the study area are *Azadirachta indica*, *Blumea lacera*, *Calotropis gigantea*, *Centella asiatica*, *Coccinia grandis*, *Eclipta prostrata*, *Glycosmis pentaphylla*, *Kalanchoe pinnata*, *Leucas aspera*, *Mikania micrantha*, *Psidium guajava*, *Ricinus communis*, *Senna alata*, *Spilanthes acmella*, *Stephania japonica*, *Terminalia arjuna* and *Zingiber officinale*. About 40% of the rural people in the study area depend on traditional medicine for their primary health care. Among the informants, 55% are males and 45% are females. The main occupations of the informants are herbal medicine practitioner, agriculture, agricultural labourer and wage labourer. Most of the villagers in the study are poor and they largely depend on plants for food, medicine, fuel and other daily necessities.

There are various ethnomedicinal plant records of the indigenous community of Bangladesh. Rahman *et al.* (2007) reported 198 species and Roy *et al.* (2008) reported 90 species from the Chakma community of the hill tract districts. Yusuf *et al.* (2006) reported ethnomedicinal uses of 34 species from Kaukhali proper and Betbungia of Rangamati district, whereas Yousuf and his co-workers reported 69 species from the Chittagong hill tracts in 2007. Faruque and Uddin (2011) recorded 43 species which are used by the Tripura Community of Hazarikhil for the treatment of various



diseases/ailments, followed by Mohiuddin *et al.* (2012) with 70 species from the Bandarban district, Uddin *et al.* (2006) with 86 species from the Phulbari of Dinajpur district, Uddin *et al.* (2011) with 84 species from Subarnachar of Noakhali, Uddin *et al.* (2012) with 56 species from Lawachara, and Sajib and Uddin (2013) with 111 species from Sandwip island. The presently recorded species have been previously indicated as the ethnomedicinal species from the different areas of Bangladesh. The present study, however, recorded six ethnomedicinal information which is new to the ethnobotany of Bangladesh. The modes of application for *Ipomoea aquatica* include the treatment of removal of infertility in women, the leaf extract of *Lannea coromandelica* to treat jaundice, the bark of *Mangifera indica* to treat jaundice, *Polyalthia longifolia* in rheumatism, *Schumannianthus dichotomus* in earache and the roots of *Urena lobata* to treat abdominal pain.

Establishment of modern health care centres is in progress in many rural areas; this may gradually change the existing pattern of indigenous knowledge system of healthcare (Sajib & Uddin, 2013). Field observations and discussions with the locals demonstrated that the diversity of ethnomedicinal plant species and traditional knowledge of the area are at great risk because of the many threats that include exotic monoculture plantation, agricultural progression, unsustainable collection of medicinal plants, industrialization, urbanization, hill cultivation, degradation of forests and modern lifestyle. Due to illegal

logging and forest fires, the undergrowth is greatly affected and has become threatened. The ethnomedicinal plants of the study area grow in various habitats such as hilly lands, cultivated lands, homestead areas, scrub jungles, fallow lands and wetland. The study area is located near the city. As a result, the habitat of some medicinal plants is decreasing day by day due to building up of commercial farms, mills and factories. Moreover, the new generation is losing interest in continuing their parents' profession because it does not provide them proper financial supports for their livelihood. Thus, documentation of these plant uses is indispensable before they disappear permanently.

## CONCLUSION

The findings of the current work are most likely the first recorded ethno-medicinal knowledge of Hathazari using standard research methods, focusing on medicinal plants and their local uses for primary health care. This health care knowledge has been passed down from one generation to another through informal education. The study has also suggested that the currently gathered information on medicinal uses of plants by the local people may be used in any ethno-pharmacological research in future for the discovery of new drugs.

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TABLE I  
Medicinal plants used by the rural community of Hathazari

Botanical name	Family	Local name	Voucher Number	Habit	Occurrence	Source	Modes of Application
1. <i>Achyranthes aspera</i> L.	Amaranthaceae	Apang	S67	H	W	FL	A necklace prepared from root and thread is tied to head to treat jaundice.
2. <i>Aegle marmelos</i> (L.) Corr. Sert.	Rutaceae	Bel	S345	T	C	HL	Juice prepared from the pulp of fruit is taken as tonic to relieve from tiredness.
3. <i>Aerva sanguinolenta</i> (L.) Blume	Amaranthaceae	Raktapata	S346	H	C	CuL	Paste prepared from crushed leaves is applied to affected areas to stop haemorrhage.
4. <i>Allium cepa</i> L.	Liliaceae	Piaz	S347	H	C	CuL	Juice prepared from the crushed bulb of <i>Allium cepa</i> and <i>Allium sativum</i> is mixed with honey and warmed. It is taken to treat cough.
5. <i>Allium sativum</i> L.	Liliaceae	Rasun	S348	H	C	CuL	Paste prepared from the crushed bulb is taken to treat rheumatism.
6. <i>Aloe vera</i> (L.) Burm f.	Aloeaceae	Gritokumari	S349	H	C	HA	Juice prepared from crushed leaves is taken to get rid of tiredness.
7. <i>Amaranthus spinosus</i> L.	Amaranthaceae	Kantamaris	S258	H	W	HL	Extract prepared from crushed leaves is taken to relieve physical weakness or tiredness.
8. <i>Ananas comosus</i> (L.) Merr.	Bromeliaceae	Anaros	S350	H	C	HL	Juice prepared from crushed leaves is taken two times daily for the treatment of cough and applied to ear cure infection.
9. <i>Andrographis paniculata</i> (Burm.f.) Wall. ex Nees	Acanthaceae	Kalomegh	S351	H	C	HA	Juice prepared from crushed leaves is taken at least thrice daily to treat fever.
10. <i>Artemisia nilagirica</i> (C.B. Clarke) Pamp.	Asteraceae	Nagmoni	S352	H	W	HL	One centimetre of stem of <i>Artemisia nilagirica</i> and half centimetre of <i>Mimosa pudica</i> stem are applied to affected area to treat joint pain and rheumatism.
11. <i>Artocarpus heterophyllus</i> Lam.	Moraceae	Kanthal	S352	T	C	HL	Latex is applied to affected area for the treatment of skin disease.

cont'd Table 1

	Liliaceae	Shotomuli	S353	CI	C	HA	
12. <i>Asparagus racemosus</i> Willd.			S353	CI	C	HA	Syrup prepared from crushed root of <i>Asparagus racemosus</i> and husk of <i>Plantago ovata</i> is taken in the morning as tonic.
13. <i>Azadirachta indica</i> A.Juss.	Meliaceae	Nim	S354	T	C	HL	Leaves boiled in water are used to take bath to treat skin disease.
14. <i>Berberis asiatica</i> Roxb.	Berberidaceae	Daruhoridra	S355	S	W	HL	Paste prepared from crushed stem is taken with one spoonful of honey thrice daily for the treatment of rheumatism.
15. <i>Blumea lacera</i> (Burm.f.) DC.	Asteraceae	Kornuta	S356	H	W	SJ	Paste prepared from crushed leaves is applied to stop haemorrhages.
16. <i>Bombax ceiba</i> L.	Bombacaceae	Simul	S357	T	C	HA	Root (removing the root bark) is taken to treat gastritis and sexual weakness.
17. <i>Cajanus cajan</i> (L.) Millsp.	Fabaceae	Arol	S358	S	C	CuL	Juice prepared from crushed leaves is taken in dog bite.
18. <i>Calotropis gigantea</i> (L.) Ait.f.	Asclepiadaceae	Orpata	S359	S	W	FL	Warm leaves are applied to affected area to treat rheumatism.
19. <i>Catharanthus roseus</i> (L.) G.Don	Apocynaceae	Nayantara	S360	H	C	HA	Juice prepared from crushed leaves is taken to treat high blood pressure.
20. <i>Centella asiatica</i> (L.) Urban	Apiaceae	Adagunguni	S361	H	W	FL	Juice prepared from crushed leaves is taken to treat dysentery.
21. <i>Cissus quadrangularis</i> L.	Vitaceae	Harjora	S362	CI	C	HA	Paste prepared from crushed leaves and stem is applied to affected areas to cure fracture.
22. <i>Citrus aurantifolia</i> (Christm.) Swingle	Rutaceae	Lebu	S363	T	C	HL	Hot infusion of fruits is taken with salt to treat cough.
23. <i>Citrus maxima</i> (Burm.f.) Merr.	Rutaceae	Jambura	S364	T	C	HL	Fruit juice is taken to treat jaundice.
24. <i>Clerodendrum viscosum</i> Vent.	Verbenaceae	Vaitbar	S365	S	W	SJ	Leaves are applied to breast to prevent breast feeding of children.
25. <i>Coccinia grandis</i> (L.) Voigt	Cucurbitaceae	Kalakachi	S58	CI	W	SJ	Juice prepared from crushed leaves is taken at least thrice daily for the treatment of diarrhoea and diabetes.



cont'd Table 1												
26.	<i>Curcuma longa</i> L.	Zingiberaceae	Halud	S366	H	C	HL	Paste prepared from crushed rhizome is applied to treat skin disease.				
27.	<i>Cynodon dactylon</i> (L.) Pers.	Poaceae	Durba	S274	H	W	FL	Juice prepared from crushed leaves is applied to stop haemorrhage.				
28.	<i>Datura metel</i> L.	Solanaceae	Dutra	S367	H	W	HA	Leaf juice mixed with mustard oil and warmed, and rubbed to affected area to treat rheumatism.				
29.	<i>Eclipta prostrata</i> (L.) L.	Asteraceae	Kelaona	S77	H	W	FL	Paste prepared from crushed leaves is applied as hair tonic and to treat scuff infection.				
30.	<i>Ficus hispida</i> L.f.	Moraceae	Dongula	S368	T	W	SJ	Young fruit are taken to treat dysentery.				
31.	<i>Glycosmis pentaphylla</i> (Retz.) A.DC	Rutaceae	Kawatunipata	S101	T	W	SJ	Juice prepared from crushed leaves is taken thrice daily for the treatment of cough, fever, abdominal pain, and vomiting.				
32.	<i>Hibiscus rosa-sinensis</i> L.	Malvaceae	Jaba	S198	T	C	HA	Paste prepared from crushed flowers is applied to hair as hair tonic before bath.				
33.	<i>Hibiscus schizopetalus</i> (Mast.) Hook.f.	Malvaceae	Joba	S369	T	C	HA	Paste prepared from crushed flowers is applied to hair as hair tonic before bath.				
34.	<i>Hyptis suaveolens</i> (L.) Poit.	Lamiaceae	Tokma	S370	H	W	HA	Twenty seeds are steeped in a glass of water and mixed with one spoon of sugar. Then, infusion is taken to relieve from tiredness and as blood purifier.				
35.	<i>Ipomoea aquatica</i> Forsk	Convolvulaceae	Kalmi	S87	Cl	W	WL	Standing pond water during the sunset seven pieces of stem of <i>Ipomoea aquatica</i> and root of <i>Clerodendrum viscosum</i> is taken, followed by taking three glasses of water for five or seven days after menstrual cycle of women to boost fertility.				
36.	<i>Justicia adhatoda</i> L.	Acanthaceae	Basak	S272	S	W	HA	Juice prepared from crushed leaves is taken for the treatment of fever and cough.				
37.	<i>Kalanchoe pinnata</i> (Lam.) Pers.	Crassulaceae	Kofpata	S371	H	C	HA	Hot infusion of leaves is taken to treat cough.				

cont'd Table 1											
38.	<i>Lannea coromandelica</i> (Houtt.) Merr.	Anacardiaceae	Badi	S298	T	W	HL	Barks are steeped in water for overnight and the prepared extract is taken in the morning to treat jaundice.			
39.	<i>Lawsonia inermis</i> L.	Lythraceae	Methi	S372	T	C	HA	Paste prepared from crushed leaves is applied to hair as hair tonic.			
40.	<i>Leucas aspera</i> (Willd.) Link	Lamiaceae	Gaishshaderos	S115	H	W	FL	Paste prepared from crushed leaves is applied to treat tonsillitis.			
41.	<i>Litsea monopetala</i> (Roxb.) Pers.	Lauraceae	Medapata	S89	T	W	HL	Extract prepared from crushed barks is taken to relieve from bladder problem.			
42.	<i>Mangifera indica</i> L.	Anacardiaceae	Aam	S373	T	C	HA	Mango bark is steeped in lime water and used to take bath to treat jaundice.			
43.	<i>Mikania micrantha</i> Kunth	Asteraceae	Tuhainmalata	S374	Cl	W	SJ	Juice prepared from crushed leaves is taken to treat gastritis. Paste prepared from crushed leaves is applied to stop haemorrhage.			
44.	<i>Mimosa himalayana</i> Gamble	Mimosaceae	Sadasarmida	S271	S	W	FL	Juice prepared from crushed roots is taken in sexual weakness.			
45.	<i>Mimosa pudica</i> L.	Mimosaceae	Lajjabati	S375	H	W	FL	Two centimetre stem of male plant is tied in hand to relieve from rheumatism.			
46.	<i>Moringa oleifera</i> Lam.	Moringaceae	Sajina	S376	T	C	HL	Cooked young fruit are taken to relieve rheumatism and as anthelmintic.			
47.	<i>Musa paradisiaca</i> L.	Musaceae	Aittakola	S377	H	C	HA	Root is applied to throat to ease fever.			
48.	<i>Ocimum americanum</i> L.	Lamiaceae	Bontulsi	S378	H	W	HA	Extract prepared from crushed leaves is taken with honey to treat cough.			
49.	<i>Ocimum tenuiflorum</i> L.	Lamiaceae	Tulsi	S379	H	W	HA	Extract prepared from crushed leaves is taken with honey to treat cough.			
50.	<i>Phyllanthus reticulatus</i> Poir.	Euphorbiaceae	Horba	S380	S	W	HL	Root is applied to breast to produce sufficient milk for children.			
51.	<i>Piper betle</i> L.	Piperaceae	Pan	S381	Cl	C	CuL	Leaves are chewed with crushed fruit of <i>Areca catechu</i> to improve digestive system.			
52.	<i>Piper nigrum</i> L.	Piperaceae	Golmorich	S382	Cl	C	CuL	Powder prepared from fruits of black piper and linseed is taken with honey to treat sexual weakness.			

cont'd Table 1

	Plumbaginaceae	LalChita	S383	H	W	HL	Roots are applied to vagina for easy delivery of baby.
53. <i>Plumbago indica</i> L.			S383	H	W	HL	Roots are applied to vagina for easy delivery of baby.
54. <i>Polyalthia longifolia</i> (Sonn.) Thwaites	Annonaceae	Debdaru	S233	T	C	HA	Tablets prepared from the crushed stem of <i>Polyalthia longifolia</i> and <i>Berberis asiatica</i> are mixed with honey and taken to treat rheumatism.
55. <i>Psidium guajava</i> L.	Myrtaceae	Peyara	S384	T	C	HL	Young leaves and salt are boiled in water and strained. The extract is taken to relieve dental pain.
56. <i>Rauwolfia serpentina</i> (L.) Benth. ex Kurz	Apocynaceae	Sarpagondha	S385	S	C	HL	Juice prepared from crushed root is taken to control high blood pressure.
57. <i>Ricinus communis</i> L.	Euphorbiaceae	Verenda	S386	S	W	HL	Juice prepared from crushed bark is taken with honey to treat rheumatism.
58. <i>Schumannianthus dichotomus</i> (Roxb.) Gagnep.	Marantaceae	Sitolpati	S166	S	W	HA	Decoction of stem is applied to ear for the treatment of earache.
59. <i>Scoparia dulcis</i> L.	Scrophulariaceae	Bondone	S387	H	W	FL	Juice prepared from crushed leaves is taken thrice daily for the treatment of dysentery.
60. <i>Senna alata</i> (L.) Roxb.	Caesalpinaceae	Daud	S388	S	C	HL	Juice prepared from crushed leaves is taken as digestive. Paste prepared from crushed leaves and root is applied to treat skin disease.
61. <i>Solanum sisymbriifolium</i> Lam.	Solanaceae	Kantikari	S389	S	W	FL	Juice prepared from crushed leaves is taken thrice times daily for the treatment of fever and cough.
62. <i>Spilanthes acmella</i> (L.) L.	Asteraceae	Nakpul	S390	H	W	HL	Flowers are applied to teeth to relieve pain.
63. <i>Stephania japonica</i> (Thunb.) Miers	Menispermaceae	Musonipata	S391	Cl	W	HL	Juice prepared from crushed leaves is taken to treat abdominal pain. Paste prepared from crushed leaves is applied to treat eczema.
64. <i>Swertia chirata</i> (Wall.) C.B.Clarke.	Gentianaceae	Chirata	S392	H	W	HA	Juice prepared from crushed leaves is taken to treat fever.

cont'd Table 1

65. <i>Terminalia arjuna</i> (Roxb. ex DC.) Wight & Arn.	Combretaceae	Arijun	S393	T	C	HL	Barks are steeped in water overnight and the infusion is taken in the morning to treat heart disease.
66. <i>Terminalia bellirica</i> (Gaertn.) Roxb.	Combretaceae	Bahera	S394	T	C	HL	Syrup prepared from crushed fruit of <i>Terminalia bellirica</i> , <i>Terminalia chebula</i> , <i>Phyllanthus emblica</i> and rhizome of <i>Zingiber officinale</i> is taken to treat diarrhoea, dysentery and to improve digestive system.
67. <i>Terminalia chebula</i> (Gaertn.) Retz.	Combretaceae	Horitoki	S395	T	C	HL	Mixture of ten grams crushed fruit of <i>Terminalia chebula</i> , ten grams of crushed leaves of <i>Datura metel</i> , rhizome juice of Zinger and honey is taken to treat body pain and fever.
68. <i>Tinospora cordifolia</i> (Willd.) Miers	Menispermaceae	Gulanchi	S396	Cl	W	SJ	Juice prepared from crushed leaves is taken to treat jaundice. Stem is applied to waist to treat jaundice.
69. <i>Trachyspermum ammi</i> (L.) Sprague	Apiaceae	Joan	S397	H	W	HA	Powder prepared from seeds is mixed with a bit of salt and taken to treat abdominal pain.
70. <i>Tribulus terrestris</i> L.	Zygophyllaceae	Gokkhur	S398	H	W	HL	Hot infusion prepared from thorn is taken to treat urinary problem.
71. <i>Urena lobata</i> L.	Malvaceae	Bailboli	S399	S	W	FL	Juice prepared from crushed roots is taken to treat abdominal pain.
72. <i>Vitex negundo</i> L.	Verbenaceae	Nishinda	S273	T	W	HA	Juice prepared from crushed leaves is taken to treat rheumatism and applied as hair tonic.
73. <i>Withania somnifera</i> (L.) Dunal	Solanaceae	Aswagandha	S400	S	C	HA	Syrup prepared from crushed root of <i>Withania somnifera</i> , bulb of <i>Allium cepa</i> , leaves of <i>Eclipta prostrata</i> is taken as antioxidant.
74. <i>Xanthosoma sagittifolium</i> (L.) Schott	Araceae	Dudhkachu	S401	H	W	HL	Cooked petiole is taken to increase production of breast milk.
75. <i>Zingiber officinale</i> Roscoe	Zingiberaceae	Ada	S402	H	C	HL	Juice prepared from crushed rhizome is taken to treat cough.

Legend: H- Herb, S- Shrub, T- Tree, Cl- Climber, C- Cultivate, W- Wild, HL- Hilly land, CulL- Cultivated land, HA- Homestead area, SJ- Scrub jungles, FL- Fallow land, WL- Wetland.

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