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Ethnomedical Studies of Chakma Communities of Chittagong Hill Tracts, Bangladesh

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Abstract

The use of local medicinal knowledge as herbal remedy is a part of traditional heritage in any rural areas of Bangladesh, especially among forest inhabitations. It has unequivocal emphasis on welfare of the highland communities of Chittagong Hill Tracts (CHT), Bangladesh. The Chakmas are the largest ethnic group in Chittagong Hill Tracts, making up more than half of the tribal population. The present study was aimed to highlight the herbal medicinal knowledge of Chakma ethnic community and associated practice in selected locations of CHT. The methodology used to investigate the medicinal use of plants includes field visits, collection of information by random interviewing of Chakma men and women in and around the study areas, namely, Rangamati and Khagrachhari districts. Present investigation revealed that Chakmas have strong belief in traditional system of medicine and still use herbal medicines prescribed by local healers. A total of 146 plant species are regularly used to treat diverse maladies like fever (9), diarrhoea (8), jaundice (7), rheumatism (5), bronchitis (4), leprosy (3), snake bite (3), cancer (2), tuberculosis (2), blood pressure (2), measles (2) etc. i.e. from simple common cold to cancer like diseases. Among plant parts, leaves (68) and roots (34) were found to be used in maximum herbal preparations. Most of these formulations were prescribed as pastes (56), extracts (49) and juices (33). While 16 species were reported to have more than one therapeutic use. 130 species were reported to have activity against single specific ailment.

Key words: Ethnomedical study, herbal medicine, Chakma, Chittagong Hill Tracts, Rangamati, Khagrachhari.

Introduction

Medicinal properties of plants were known even to pre-historic men and many of these plants have been used in traditional medicine for hundreds of years with reputation as efficacious remedies (Ghani, 1998). Phytotherapy seems to be an alternate system of medicine for the people residing in the suburban/ rural areas (Nandankunjidam, 2006). According to the WHO, about 80% of the world's population relies on traditional medicine for their primary health care (Behera, 2006). Over the last century, ethnobotany has evolved into a specific discipline that looks at the people–plant relationship in a multidisciplinary way such as ecology, economic botany, pharmacology, public health and other disciplines as needed (Balick, 1996). A large number of plants are being used as medicinal agents all over the world. 1500 species in India (Handa, 1998), 5000 species in China (WHO, 2003) and 1600 species in north-west Amazonia (Schultes and Raffauf, 1990) have been reported to possess medicinal uses. Limitations of synthesized compounds in the treatment of chronic diseases and the potential of plant based medicine as a more effective and cheaper alternative was probably responsible for the fast growing industry of herbal medicine (Rojas *et al.*, 1992). Many drugs that are currently in the market have come from folk medicine and traditional use of plants by indigenous communities (Prance, 1994). Discovering the cardiac effect of the leaves of *Digitalis purpurea* that were useful for treating dropsy is the best example of folk use based herbal medicine (Cox, 1994). About 25% of the prescription drugs issued in the USA and Canada contain bioactive compounds that are derived from or modeled after plant natural products (Farnsworth, 1984).

Materials and Methods

The study area (MoCHTA, 2011a): Chittagong Hill Tracts (CHT), the only extensive hilly area in Bangladesh lies in southeastern part of the country is situated between 210° 25' N to 230° 45' N latitude and 910° 54' E to 920° 50' E longitude (Fig. 1) bordering Myanmar to the southeast, the Indian state of Tripura to the north,

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Mizoram to the east and Chittagong district to the west. The Chittagong Hill Tracts, combining three hilly districts of Bangladesh are Rangamati, Khagrachhari and Bandarban districts. The area of the Chittagong Hill Tracts is about 13,295 sq km, which is approximately one-tenth of the total area of Bangladesh.

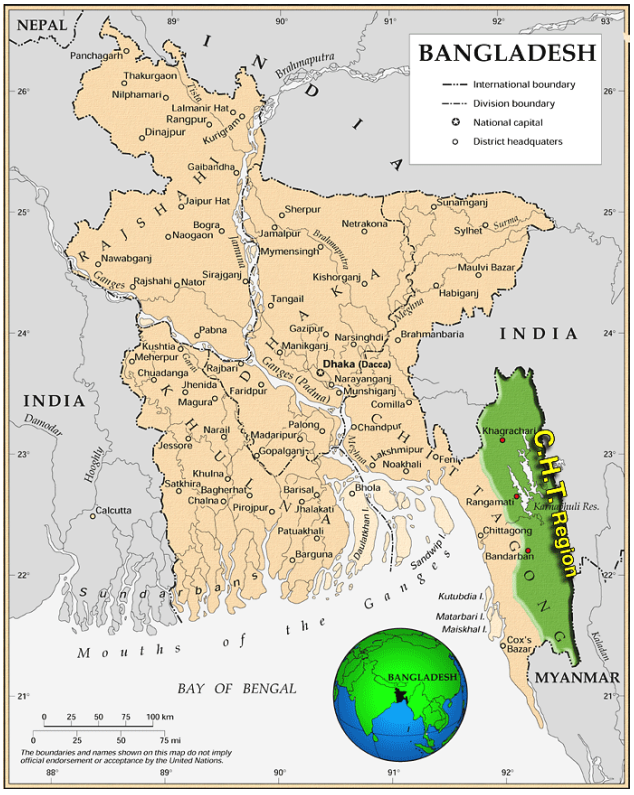

Figure 1. Location map of Chittagong Hill Tracts (CHT) (MoCHTA, 2011b)

Localities and populations studied: Total population enumerated in the 1991 census was 9,74,447 of which 5,01,114 were tribals and rest are from different communities. The local tribes, collectively known as the Jumma, include the Chakma, Marma, Tripura, Tenchungya, Chak, Pankho, Mru, Murung, Bawm, Lushai, Khyang, and Khumi. Most of the ethnic groups follow Buddhism. Some are the followers of Hinduism and Christianity. Among the non-tribal communities most of the inhabitants are Bengali Muslim settlers. These tribal and non-tribal populations of CHT living there are keeping communal harmony and their own ethnic cultural, religious and linguistic diversity from a long time (MoCHTA, 2011c).

Bangladesh is the abode for 21 ethnic communities (Khaleqe, 1995). Among them, the Chakma tribe is the largest and most dominant one. Total population of Chakma is about 253,000 (Tripura, 1994) of which more than 90 percent live in Rangamati and Khagrachori districts. Even in the recent past, the Chakma people living in Bangladesh used to meet their daily need mostly from natural forest products. The Chakmas form the largest ethnic minority group inhabiting the Chittagong Hill Tracts forest region of Bangladesh. They have their own traditional medicinal practitioners and have a long tradition of using plants to cure diseases.

This study was conducted in view of gathering the knowledge of traditional medicines which are used in Chakma ethnic community. Traditional ethno medical information could offer a fast way to the discovery of new medically or industrially useful compounds (Moran, 1961).

Ethnobotanical surveys and data collection: In order to explore plants used as ethnomedicine by Chakma community, various field surveys were conducted in the study area. Information was gathered by taking random interview of Chakma men and women with various secondary related sources. Perceptions were taken through direct interview and questionnaire based survey in the study area. Information asked in the questionnaire included:

- name, age, sex, education, occupation and ethnicity of the interviewed person;
- name of the used plant;
- disease in which plant was used;
- part of the plant being used;
- form of the medicine.

In survey, a total of 186 people were interviewed among which 181 were male, the remaining 5 were female. The average age of the informants was around 41-40 years. Most of informants (84) have passed HSC, 63 were Graduate, 24 passed SSC examination and 15 were under SSC. Professionally most of the informants were service holders, and 34 were small traders, and 15 were farmers. All of the informants (186) were Buddhist. The demographics of informants are presented in Table 1.

Table 1. Demographics of informants during questionnaire survey.

Total no. of informants: 186				
Age groups	31-40 : 32	41-50: 96	51-60: 49	>60: 9
Education	Graduate: 63	HSC: 84	SSC: 24	<SSC : 15
Occupation	Service holder: 137	Farmers: 15	Traders: 34	
Gender	Male: 181	Female: 5		
Ethnicity	Buddhist: 186	Others: 0		

Results and Discussion

During the ethnobotanical surveys carried out in Chakma communities of Rangamati and Khagrachhari districts in CHT region, medicinal properties of 146 plants used as a remedy to treat ailments like simple common cold to cancer like diseases were recorded (Table 2).

Table 2. Ethnopharmacological application of medicinal plants in Chakma community.

No.	Local name	Botanical name	Disease in which drug is used	Form of the medicine	Plant part used
1	Ada	*Zingiber officinale*	Allergy	Juice	Rhizome
2	Agunitita	*Plumbago indica* L.	Dysentery	Pill	Leaf
3	Amilani	*Oxalis corniculata*	Infant sickness	Extract	Root
4	Amoloki	*Phyllanthus emblica*	Insomnia	Juice	Fruit
5	Anus	*Ananus sativus*	Leprosy, anthelmintic	Paste	Fruit
6	Arjun	*Terminalia arjuna*	Blister	Paste	Leaf
7	Ash gach	*Leea macrophylla* Roxb.	Tonsillitis	Extract	Leaf
8	Ash muli gach	*Vitex peduncularis* Wall.	Jaundice	Paste	Bark
9	Asham ludi	*Mikania micrantha*	Treat cut	Paste	Leaf
10	Aulod	*Curcuma longa*	Blood disease	Powder	Rhizome
11	Baghadara	*Dalbergia spinosa* Roxb.	Sty	Warm leaf	Leaf
12	Bangari gach	*Bridelia stipularis*	Allergy	Juice	Leaf
13	Barotora gach	*Blumea lancelaria*	Fever	Paste	Leaf
14	Bashoke pada, adathoda, gasraja	*Adhatoda Vasica*	Chest pain, coughs, colds and asthma	Paste	Leaf
15	Bat boitta shak	*Commelina paludosa* Blume.	Dysentery	Extract	Leaf
16	Bel	*Aegle marmetos*	Dysentery, diarrhea	Juice	Fruit
17	Bhantihara phul	*Ixora villosa* Roxb.	Abdominal pain	Juice	Leaf & fruit
18	Bhola kadam	*Saurauia roxburghii*	Boil	Extract	Leaf
19	Bhoshmula	*Launaea sarmentosa*	Urinary problem	Extract	Root
20	Bhulchengi	*Alpinia niger*	Gastric ulcer	Extract	Root
21	Bhuth shan	*Piper boehmerifolium* Well.	Mumps	Juice	Stem
22	Bhutta ludi	*Dioscorea pentaphylla* L.	Rheumatism	Paste	Leaf
23	Bilai lengur	*Uraria hamosa* Wall.	Hysteria	Paste	Leaf
24	Bishimijal, mijlickkher	*Borreria pusilla*	Bone fracture	Paste	Plant
25	Bishma	*Hydyotis scandens* Roxb.	Stomach pain	Extract	Leaf
26	Bongol gach	*Cordia dichatoma* Forst.	Vaginitis	Extract	Root
27	Bor sudma	*Gardenia latifolia* Aiton.	Caries	Bark crushed with boiled water	Bark
28	Bora gulo	*Terminalia bellirica*	Breathing problem	Powder	Fruit
29	Borduttya, dutta ludi	*Ichnocarpus frutescens*	Bone fracture	Paste	Whole plant
30	Chala ludi, sola ludi	*Byttneria pilosa* Roxb.	Boil	Paste	Stem
			Scabies	Paste	Leaf

Table 2. continued

31	Changa dana	*Hyptis suaveolens*	Fever	Extract	Root
32	Chongralace	*Ficus mollis* Vahl.	Boil	Paste	Leaf
33	Dalsini	*Cinnamomum verum*	Nausea	Powder	Bark
34	Dando upp	*Vernonia patula*	Tonsillitis	Extract	Leaf
35	Daraglick	*Alpinia conchigera*	Dysentery	Juice	Rhizome
36	Deldipada	*Thunhergia grandiflora* Roxb.	Eye infection	Sap	Stem
37	Delong pada	*Cassia alata*	Eczema	Paste	Leaf
38	Den anno	*Schefflera roxburghii*	Insomnia	Paste	Leaf
39	Dhekishak	*Pteris vitata*	Cough & bronchitis	Juice	Plant
40	Dhuptora	*Buddleja asiatica* Lour.	Fever	Paste	Leaf
41	Donia	*Coriandrum sativum*	Sores	Paste	Whole plant
42	Dubhoza	*Callicarpa macrophyla* Vahl.	Fever	Bark extract	Bark
43	Duglo gach	*Cynodon dactylon*	Skin disease, bleeding	Juice or paste	Whole plant
44	Faranga ludi, horinkan	*Trichosantes anguina*	Cancer	Juice	Fruit
			Insect bites	Paste	Root
45	Fessya gach	*Hoya parasitica* wall.	Fever & body pain	Leaf paste	Leaf
46	Fuji gach	*Peliosanthes tata*	Earache	Extract	Leaf
47	Gamari gulo	*Gmelina arborea*	Anemia	Extract	Root
48	Gan guk maichya, gangkumaichya	*Ludiwigia prostrate* Roxb.	Whooping cough	Juice	Plant, stem
49	Gazor	*Daucas carota*	Piles	Juice	Root
50	Gios	*Kalanchoe pinnata*	Inflammation	Extract	Root
51	Gol morich	*Piper nigrum*	Tumor	Paste	Fruit
52	Guim, Peyara	*Psidium guajava*	Bronchitis	Extract	Leaf, bark, fruit
53	Haggang ludi	*Vitis pentagona*	Eczema	Juice	Leaf
54	Hamarang	*Stereospermum chelonodies*	Tuberculosis	Pill	Leaf
55	Harinchi, horinshing	*Anisomeles indica*	Fever	Extract	Leaf
56	Harsanga	*Flemingia bracteata* Roxb.	Tetanus	Extract, paste	Root , leaf
57	Haturi nolakher	*Impaliens flavida* Colebrook.	Boil	Paste	Leaf
58	Hel gach	*Chasalia curviflora*	Snake & insect bite	Paste	Leaf
59	Hogoeya	*Trevesia palmata*	Bruising	Paste	Root
60	Hoti gach	*Leea indica*	Painful joint	Paste	Leaf
61	Isswer muli	*Vitis pedata*	Abdominal tumor	Extract	Root
62	Jang gach	*Callicarpa arborea* Roxb.	Bone fracture	Paste	Root, bark, leaf
63	Jharbo hogoeya	*Heptapleurum hypoleucum*	Diarrhea	Leaf extract	Leaf
64	Jharbua puishak	*Ixora pubirama* Bremeck	Insect bite	Leaf paste	Leaf
65	Jharul phul	*Thysanolaena moxima*	Tuberculosis	Pill	Leaf
66	Juri mandakher, juri manda	*Desmodium triquertrum*	Epilepsy, hysteria	Extract, juice	Root
67	Kalashona	*Ixora nigricans* Br.	Diarrhea	Root extract	Root
68	Kam gach	*Nauclea sessifolia*	Fungal infection	Paste	Leaf
69	Kamboli	*Phyllanthus reticulates* Poir.	Caries	Extract	Whole plant
70	Kanta naksha	*Acacia farnesiana*	Headache	Paste	Leaf
71	Kasto dagor	*Tabernaemontana recurva* Roxb.	Fever	Juice	Root
72	Ketha boitta shak	*Cardiospermum helicacabumb* L.	Mumps	Extract	Root
73	Ketoki	*Costus speciosus*	Stop bleeding	Extract	Root

Table 2. continued

74	Khar tethoi	*Begonia roxburghii*	Jaundice	Extract	Whole plant
75	Khbukka	*Stephania glabra*	Hysteria	Extract	Root
76	Khetranga	*Alpinia niger* Genrtn.	Jaundice	Extract	Root
77	Khurangul	*Tetrastigma bracteolatum*	Headache	Paste	Leaf
78	Kira	*Cucumis sativus*	Throat troubles	Juice	Fruit
79	Koba bena	*Morinda angustifolia*	Urinary problem	Extract	Stem & root
80	Koba rashum	*Crinum asiaticum* L.	Boil	Paste	Root
81	Kodora teng	*Dracaena spicata* Roxb.	Measles	Pill	Leaf
82	Kodorteng	*Dracaena spicta* Roxb.	Measles	Pill	Leaf
83	Kudug jhunjuni	*Crotalaria pallida* Ait.	Rheumatism	Seed with ripe banana	Seed
84	Kugia	*Carica papaya*	Intestinal disorder	Juice	Fruit
85	Kumujja ludi	*Caesalpinia bondue* Roxb.	Skin infection	Paste	Leaf
86	Kurochick	*Rourea minor*	Diarrhea	Extract	Leaf, stem
87	Kuruar gach	*Derris robusta* Benth.	Wounded limbs	Paste	Leaf
88	Kuruk gach	*Holarrhena antidysenterica*	Jaundice	Bark crushed with boiled water	Bark
89	Kushum	*Litesa sebifera* Pers.	Urinary problem	Extract	Root
90	Lal bherol	*Ricinus communis*	Spleenomegaly	Pill	Leaf
91	Lelom pada, slazra	*Premna esculenta* Roxb.	Bacterial & fungal infection	Paste	Leaf
92	Lengera	*Xanthium indicum* J.	Infection	Past	Leaf
93	Lodianang	*Gymnema acuminatus* Wall.	Chest pain	Leaf paste applied to affected area	Leaf
94	Lodiannol	*Wendlandia paniculata*	Chest pain	Crashed	Leaf
95	Long dhama shak	*Embelia ribes* Burm.	Jaundice	Juice	Leaf
96	Ludi jaylla	*Litsea lanicifolia*	Diarrhea	Extract	Root
97	Ludi sharbo	*Ficus heteropleura* Blume.	Constipation	Leaf extract	Leaf
98	Madal gach	*Erythrina variegate* L.	Intestinal worm	Juice	Leaf
99	Milini pada	*Curculigo orchioides*	Snake bite	Paste	Petiole
100	Minguni	*Centella asiatica*	Syphilis, ulcer	Juice	Whole plant
101	Monraiccha	*Eurya acuminate* DC.	Diarrhea	Root extract	Root
102	Monriccha ludi	*Jasminum scandens*	Typhoid fever	Extract	Plant
103	Muruli	*Maesa acuminata*	Diarrhea	Extract	Leaf
104	Naina bichi gach	*Macaranga peltala* Roxb.	Pill	Extract	Root
			Boil	Paste	Bark
105	Naricul	*Cocos nucifera*	Weakness, diarrhea	Juice	Fruit
106	Nim	*Azadirachta indica*	Eczema	Paste	Leaf
107	Noli gach	*Torenia travancoria*	Bone fracture	Paste	Leaf
108	Norpudi tida	*Ficus racemosa* L.	Tonsillitis	Root is given to chew	Root
109	Orsallu	*Macrosolen cochinchinesis*	Jaundice	Juice	Leaf
110	Oulo	*Dillenia indica*	Cough	Juice	Fruit
111	Pagasa	*Cuscutta reflexa*	Eczema	Paste	Whole plant
112	Paitto marmoijja	*Silvianthus bracteatus* Hook.	Leprosy	Paste, crushed	Leaf& root
113	Palachengay	*Amomum dealbatum* Roxb.	Abscesses	Extract	Rhizome
114	Palong shak	*Spinacea oleracea*	Breathing problem	Juice	Leaf

Table 2. continued

115	Pan	*Piper bette*	Carminative	Juice	Leaf
116	Paranga ludi	*Abelmoschus moschatus*	Healing of cuts	Paste	Leaf
117	Patalpur	*Cyclea barbata* Miers.	Allergy	Juice	Leaf
118	Peaz	*Allium cepa*	Blood pressure, headache	Juice, paste	Whole plant
119	Pipul	*Piper longum*	Mumps	Extract	Fruit
120	Pitting gulo gach	*Amischotolype mollissima*	Malarial fever	Paste	Leaf
121	Porsal	*Dendropthoe falcate*	Rheumatism	Paste	Leaf
122	Pui shak	*Basella alba*	Urticaria	Juice , paste	Whole plant
123	Rasun	*Allium sativum*	Leprosy, whopping cough, blood pressure	Paste, juice	Whole plant
124	Sabarang	*Onychium siliculosum*	Blood dysentery	Extract	Root
125	Sadiraissya	*Antidesma roxburghii* Wall.	Dyspepsia	Root juice	Root
126	Sattis chara gach	*Asparagus racemosus* Willd.	Vaginitis	Juice	Root
127	Sharbo gach	*Streblus asper* Lour	Earache	Extract	Bark
128	Sheodima	*Mussaenda roxburghii*	Rheumatism	Pill	Root
129	Shukuja	*Bridelia retusa*	Skin infection	Paste	Leaf
130	Shumo phul	*Bidens sulphurea*	Acne	Paste	Flower
131	Silkori	*Albizia procera* Roxb.	Intestinal worms	Juice	Fresh leaf
132	Simaful	*Bombax ceiba*	Boil	Paste	Flower
133	Sisue	*Dalbergia sissooha*	Bleeding	Paste	Leaf
134	Surshan	*Ravvolfia serpentia* L.	Blood pressure	Extract	Root
135	Taita	*Oroxylum indicum*	Jaundice	Extract	Bark
136	Tajjya ludi	*Aristolochia tagala* Cham.	Abdominal pain	Extract	Root
137	Ten bhang	*Ficus hirta* Vahl.	Snakebite	Paste	Fruit
138	Ten brama	*Allophyllus Villosa* Roxb.	Partial deafness	Extract	Bark
139	Teolang	*Grassocephatum crepidioides*	Abdominal pain	Extract	Stem
140	Tethoi, kurua, kurua tethoi	*Maesa ramentacea*	Diarrhea	Juice	Leaf
141	Tora gach	*Blumea charkei* Hook.	Bone fracture	Paste	Leaf
142	Tormus	*Citrullus lanatus*	Liver disease	Juice	Fruit
143	Udul pada	*Sterculia villosa* Roxb.	Rheumatism	Extract	Petiole
144	Urmur pada	*Amomum aromaticum*	Mumps	Extract	Rhizome
145	Uskura	*Flemingia stricta* Roxb.	Polio	Extract	Stem
146	Wun miniar	*Argyreia capilliformis*	Inflammation	Paste	Leaf

It is observed from the field study and direct interview of various classes of Chakma people that the most of the tribal people including Chakma community were highly dependent on local medicinal plants herbal and traditional-cultural treatments by tribal healer. No fixed pattern was observed behind consumption of the plants. The tribal healers neither prescribed, nor did the general population consume any fixed amount of plants for a certain period. Consumption depended rather on the availability of the plants and continued for as long as the patient thinks that it would be beneficial for him or her.

Access to safe drinking water in the CHT has been difficult due to the topography of the area. Often the safe water options available are costly and require specific technical support not easily found in the CHT. Many of the "paras" (villages) continue to use open hanging latrines or open defecation, increasing the prevalence of fecal borne and other communicable diseases. The hill districts, during the rainy season, are also favorable for mosquito breeding. That is why; fever, malaria and GIT disorders such as diarrhea, dysentery are very common illness among the indigenous peoples of CHT region of Bangladesh. Deaths due to malaria in this area counts 33 in 1000 every year (Unicef, 2007). According to a report published by The Financial Express, malaria claimed some 193 lives and infected 56,789 people in 2007 in the

Chittagong Hill Tracts (CHT) region as per official figures. Unofficial sources, however, claimed that the death toll and the number of people affected by malaria in the region would be much higher (The Financial Express, 2008). Of the total 146, 9 plants were reported to cure different forms of fever. Several plants, e.g. *Buddleja asiatica* Lour., *Anisomeles indica, Blumea lancelaria* were used against common fever whereas only *Amischotolype mollissima* and *Jasminum scandens* were found to be used against malarial fever and typhoid fever respectively. Plants such as *Heptapleurum hypoleucum, Ixora nigricans* Br., *Rourea minor, Litsea lanicifolia, Eurya acuminate* DC., *Maesa acuminate, Maesa ramentacea, Cocos nucifera* and *Aegle marmetos* are used to treat diarrhea. Against dysentery, six plants, such as *Plumbago indica* L., *Alpinia conchigera, Commelina paludosa* Blume were reported to be used. Several other plants were used to cure common GI disorders i.e. abdominal pain, stomach pain, nausea, gastric ulcer, dyspepsia, constipation and flatulence.

The weather of CHT region is characterized by tropical monsoon climate. The dry and cool season is from November to March; pre-monsoon season is April-May which is very hot and sunny and the monsoon season is from June to October, which is warm, cloudy and wet (Banglapedia, 2006). Due to climate and topography, different types of skin diseases along with cuts and bruises are common among Chakma population. Different preparations from *Cassia alata, Vitis pentagona, Azadirachta indica, Cuscutta reflexa* are used for eczema. *Azadirachta indica* or Neem is well known for its medicinal properties and considered as a major component in Ayurveda and Unani medicine and is particularly prescribed for skin diseases (Rahman and Jairajpuri, 1996). *Zingiber officinale* or Ada, *Bridelia stipularis* and *Cyclea barbata* Miers. are used against allergy; *Saurauia roxburghii, Byttneria pilosa* Roxb., *Ficus mollis* Vahl., *Impaliens flavida* Colebrook., *Crinum asiaticum* L., *Macaranga peltala* Roxb., *Bombax ceiba* are used to treat boils; *Dalbergia sissooha* or Sisu, *Curcuma longa, Abelmoschus moschatus, Costus speciosus, Mikania micrantha* are used to stop bleeding, and various other plants are used to cure bacterial and fungal infections, inflammations, anemia, bruising, wounded limbs etc.

Several plants are reported to cure jaundice (7), bronchitis and breathing disorders (4), cough (4), mumps (4), tonsillitis (3), chest pain (3), measles (2) and blood pressure (2). Among these plants, *Allium cepa* or Onioin/Peaz (blood pressure, headache), *Psidium guajava* or Guim/Peyara (bronchitis), *Adhatoda Vasica* or Bashoke pada/adathoda/gasraja (chest pain, coughs, colds and asthma), *Spinacea oleracea* or Spinach/ Palong shak (breathing problem), *Piper longum* or Pipul (Mumps) and *Allium sativum* or Garlic/Rasun (leprosy, whopping cough, blood pressure) are well known plants.

Bangladesh has re-enforced its polio free status by providing two drops of polio vaccine during the 18th National Immunisation Day (NID) in January, 2010 (Unicef, 2010). The survey revealed a single plant, *Flemingia stricta* Roxb., which is locally called Uskura, was used by Chakma healers for treatment of polio. 5 plants were reported to treat rheumatism followed by bone fracture (5), urinary problems (3), snake bite (3), insect bite (3), leprosy (3), tumour and cancer (3), caries (2), hysteria (2), tuberculosis (2), insomnia (2), intestinal worms (2) etc. The number of plants used against important ailments is shown in Fig. 2. 16 species were found to be used for curing more than one ailment whereas 130 species were reported to be used against single specific ailment.

Among the plant parts used, leaves (68) were highly utilized followed by roots (34), fruits (15), whole plant (14), barks (11), stems (7), rhizomes (5), flowers (2), petioles (2) and seeds (1) (Fig. 3). Methods of preparation fall into six categories. A maximum 56 formulations were reported to be used in paste form, whereas 49 preparations in extract and 33 in juice form were used. The other three categories i.e. pill (7), crushed plant parts (4) and powder form (3) were reported less frequently (Fig. 4).

It is obvious that Chakma people were bound to take their own treatment system due to religious pressure, lack of proper education, ignorance about modern medical treatment, undeveloped transports and communication and over all backwardness from the modern society. But it is alarming that the herbal medicinal knowledge and practices of Chakma people are gradually disappearing day by day. Perception which are taken through direct interview and questionnaire survey that only 30-35 %

Chakma people are using this type of health treatment whom are living in remote hilly areas in Khagrachhari and Rangamati region of Bangladesh.

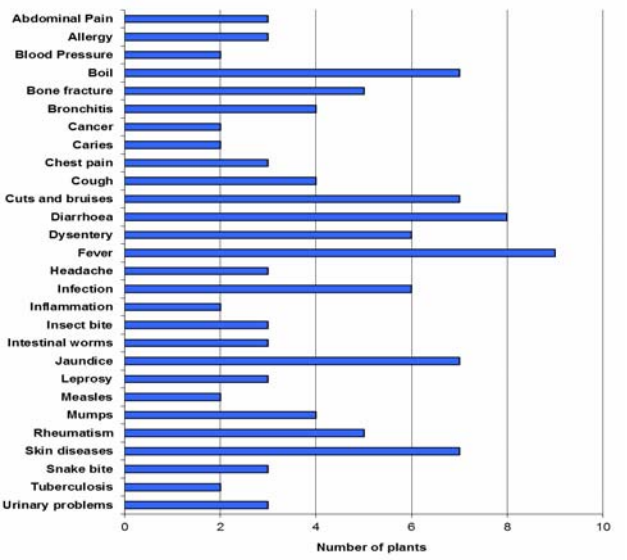

Figure 2. Number of plants having different pharmacological actions.

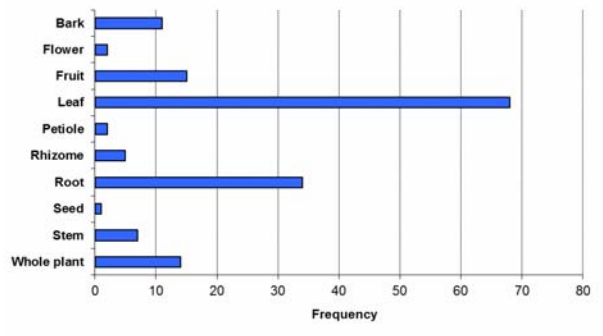

Figure 3. Most frequently used plant parts.

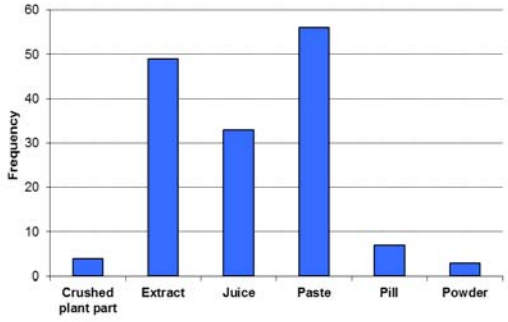

Figure 4. Methods of preparation of herbal remedies.

Conclusion

Present study revealed various claims about the medicinal properties of plants used by the Chakma community of Chittagong Hill Tracts (CHT) to cure various ailments. Illuminating information on traditional therapeutic applications of plants with lesser known or new medicinal claims will be a significant ethnobotanical contribution from the remote high hills and difficult terrains of CHT. It opens new vistas for the researchers to carryout in-depth phytochemical and pharmacological investigations, which may lead to the discovery of novel bioactive molecules.

Drawing on the observation during fieldwork, the following ideas and clues on possible improvement may be considered:

- With the active participation of the local people, the existing medicinal plants should be systematically documented and recorded; the document may also be made available in major local languages in a simple and user friendly manner.
- Organized motivational and awareness raising campaign regarding medicinal plant and their benefits may be carried out at the community level, especially amongst the younger population, by involving the community leaders and local community based organizations and NGOs.
- Experimental propagation nurseries may be established under government and non-government initiatives to ensure sustained supply of seeds.
- The mainstream research institutions in the country, especially the forest and agriculture research institute and Universities may be encouraged to provide the much needed research support for proper documentation of the knowledge of medicinal plants and associated folk and herbal treatment methods.
- The local press, media and folk cultural practices may be utilized as community- based extension and dissemination media to highlight the importance of conserving this traditional practice and heritage.
- The local NGOs and community based organizations may also be exploited for initiating a network or platform to bring Chakma healer together.

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