



Study of Some Traditionally Important Medicinal Plants for Primary Healthcare by Local People in the Northern Part of Malda District, West Bengal (India)

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Abstract

Since the dawn of civilization traditional knowledge of medicinal plants become an integral part of society. Rural and sub urban people across the globe have a long tradition to use medicinal plants for curing different ailments. An investigation had been carried out on traditionally important medicinal plants used by the local people for primary health care in the northern part of Malda district, West Bengal, India. A total of 72 plant species belonging 43 families of 66 genera had been obtained through our study. Herbs were emerged as predominant types and leaves were found frequently used in curing of different ailments in our study. Majority of plants had been used in curing gastrointestinal, followed by dermal problems. The study indicates the needs of conservation of medicinal plants and explores the future prospect of research on this issue.

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Medicinal plants, Traditional knowledge, Healthcare, Gastrointestinal and Dermal problems, Conservation, Malda.

Introduction

Plants have important role in human civilization for food, medicine, cloth and shelter. Ayurveda, Unani, and Siddha are common traditional system of medicine in India. In ancient time the religious peoples like Vaidya or Hakim or Kabiraj had played the pivotal role of medical practitioners for century long. Medicinal plant gardens were established at every village for healthcare (Husain, 1983). Indigenous culture has been enriched by the knowledge of traditional medicinal plants (Kichu *et al.*, 2015). According to report of WHO, 80% population of world depends on traditional medicine for their treatment of different ailments (Kadhirvel *et al.*, 2010). Many rural people including tribes use the folk medicine for their primary treatment (Datta *et al.*, 2014). The knowledge of medicinal plants has been transmitted from

prudent to rising generation. It has extensive importance in Pharmacology (Sinhbabu and Banerjee, 2013). Ethno botany is the relationship between plants, humans and cultures (Kaur, 2015). Patients take the drugs in different ethnobotanical formulations by the recommendation of healers (Sarkar and Das, 2010). Herbal drugs are prepared from different parts of plants i.e. leaves, barks, fruits, roots and seeds. Some side effect neutralizing and synergistic compounds are frequently exists within medicinal plants (Parvaiz, 2014). It is reported that 139 plant species are used by the village people in Tamilnadu, India for curing of 142 ailments (Sivasankari *et al.*, 2014). Documentation of traditional knowledge has been done through an ethno botanical study of medicinal plant in Palamalai region of Eastern Ghats, India. A total of 118 plant species have been documented by this study (Silambarasan and Ayyanar, 2015). Crude

plant extract can inhibit the growth of virulent pathogens. It is reported that leaves of *Piper betle* L. have antimicrobial compounds against some food borne pathogens (Hoque *et al.*, 2011). According to report of Hunter (1876), 18 different types of herbal drugs had been recommended by native practitioners in the district of Malda. As per their opinion dermal and abdominal problems had been cured by these drugs. Documentation of traditional knowledge is one of the most important strategy of conservation as well as search of phytochemicals for drug development (Ugulu and Aydin, 2011; Vuuren, 2008). An attempt has been taken to document the plant species used in primary healthcare for curing different ailments by traditional knowledge in the northern part of Malda district.

Materials and Methods

This part is divided into three sections. The sections are study area, information collection from local people, and identification of plant species and preservation/conservation of specimens.

Study area

Malda district is the gateway of North Bengal. The district is surrounded by North and South Dinajpur districts in its north, Murshidabad district in south, Bihar and Jharkhand in West and in east this is separated from Bangladesh by an international border (<http://wbnorthbengaldev.gov.in>). The district headquarter has latitude of 25° 0' 39.0276" N and longitude of 88° 8' 27.9528" E. It has an elevation of 31 meters.

The district at its northern extremes is surrounded by two police station, viz. Chanchal (25° 23' 12.6132" N and 88° 0' 33.8940" E) (<http://latlong.net>) and Harishchandrapur (25° 24' 24.51" N and 87° 52' 0.97" E). (<http://distanceto.com>). Each police station comprises of two blocks. Alsiatola, Chanchal, Dakshinsahar, Kaligram, Paharpur and Umarpur villages of Chanchal-I block, Bhakri and Malatipur villages of Chanchal - II block, Harishchandrapur, Isadpur and Kanua villages of Harishchandrapur – I block and Barduary and Doulatpur villages of Harishchandrapur – II block had been selected for this study. The demographic distribution of the study area shows the governing population belongs to Muslims and followed by Hindus. Among Hindus Santals, Kharawars, and Namasudre are ethnic groups (<http://malda.nic.in>) where Sheikhs and Shersabadia are the predominant groups of Muslims (<http://en.wikipedia.org/wiki/malda>).

Information collection

The study had been undertaken in the above mentioned area during November,2016 to May,2017. Information of traditional practice of medicinal plants were collected from local people including aged knowledgeable person and traditional healers using semi-structured questionnaire, interview and group discussion techniques. Data were generated from 100 respondent including women. Data were cross checked with each other and finally it was summarized.

Identification and preservation/conservation of specimens

Plants were collected with the help of local people. It was identified and authenticated using standard taxonomic literature (Prain, 1996, 1999; De Sarkar, 2015). Specimens were preserved by standard herbarium techniques and that will be deposited in Chanchal Siddheswari Institution Herbarium. Some of the documented plants have been conserved in medicinal plant garden of Chanchal Siddheswari Institution.

Results and Discussion

In this investigation, we focused mainly on plant species that are frequently used in curing of several ailments by the local people in and around of study area. A total of 72 plant species belonging to 43 families and 66 genera have been documented in the present investigation. Plants with their botanical names, followed by their local names, families, used parts and medicinal uses have been tabulated in Table 1. Among the distribution of families, 4 in each species belong to Fabaceae and Rutaceae, followed by 3 in each Acanthaceae, Apocynaceae, Combretaceae, Lamiaceae and Piperaceae. Alliaceae, Amaranthaceae, Apiaceae, Asteraceae, Cucurbitaceae, Euphorbiaceae, Malvaceae, Meliaceae, Myrtaceae, Poaceae, Rubiaceae, Solanaceae and Zingiberaceae families comprises of 2 species. The rest of families comprises of single species. By the analyzing the nature of medicinal plants herbs (49%) are emerged as predominant type, followed by trees (25%), shrubs (15%) and climbers (11%) – Fig. 1. A statistical analysis of used parts of these medicinal plants shows leaves (41%) are frequently used for healing and curing of different ailments, followed by fruits(15%), roots and whole plants(9% in each),bark and stem(7% in each), seeds(5%), rhizomes(3%) and flowers(1%) (Fig. 2).

Table.1 Medicinal plants used for the treatment of several ailments by local people in the northern part of Malda District

Sl. No.	Botanical Name	Local Name	Family	Used Parts	Medicinal Uses
1	<i>Abroma augusta</i> (L.) L. f.	Utkambal	Sterculiaceae	Bark	Decoction of fresh stem bark is used in azoospermia.
2	<i>Vachellia nilotica</i> (L.) P.J.H. Hurter & Mabb.	Babla	Fabaceae	Stem	Young stem is used as toothbrush.
3	<i>Achyranthes aspera</i> L.	Chorchoria	Amaranthaceae	Root	Fresh root is used in abortion. Nail infection is cured by root extract.
4	<i>Adhatoda zeylanica</i> Medikus.	Haravakash, Vasak	Acanthaceae	Leaf	Decoction of leaf is used in cold and cough.
5	<i>Aegle marmelos</i> (L.) Corr.	Bel	Rutaceae	Fruit	Pulp is used in constipation.
6	<i>Allium cepa</i> L.	Pianj	Alliaceae	Bulb	Hair growth is promoted by bulb extract.
7	<i>Allium sativum</i> L.	Rasun	Alliaceae	Bulb	Extract is taken in rheumatoid disease.
8	<i>Aloe barbadensis</i> Mill.	Ghrita Kumari	Asphodelaceae	Leaf	Extract is used in pimple. Leaf paste is used in burn injury.
9	<i>Alstonia scholaris</i> R.Br.	Choyton	Apocynaceae	Bark	Extract is used for reducing abdominal pain.
10	<i>Amaranthus spinosus</i> L.	Kantanote	Amaranthaceae	Root	Decoction of root extract is taken in dysentery.
11	<i>Andrographis paniculata</i> (Burm.f.) Wall.ex.Ness.	Kalmegh	Acanthaceae	Leaf	Leaf paste is used in liver trouble and as anti-helminthic.
12	<i>Annona squamosa</i> L.	Ata	Annonaceae	Leaf	Leaf dust is used as anti-lice.
13	<i>Azadirachta indica</i> A. Juss.	Neem	Meliaceae	Leaf and Stem	Decoction of leaf is used in diabetes. Stem extract is used in gum infection.
14	<i>Bacopa monnieri</i> (L.) Pennell	Brambhi	Plantaginaceae	Whole plant	Aqueous extract is used for memory improving.
15	<i>Bombax ceiba</i> L.	Shimul	Malvaceae	Root	Root extract is used in azoospermia.
16	<i>Cajanus cajan</i> (L.) Millsp.	Arhar	Fabaceae	Leaf	Leaf extract is taken during jaundice.

17	<i>Calotropis gigantea</i> (L.) W.T.Aiton	Akanda	Apocynaceae	Leaf	Hot leaf is used as analgesic
18	<i>Carica papaya</i> L.	Papita	Caricaceae	Fruit	Boiled part is used in indigestion. Latex used in fungal infection.
19	<i>Cassia sophera</i> L.	Kalkasunde	Fabaceae	Root	Decoction of root extract is used in gum infection.
20	<i>Catharanthus roseus</i> (L.) G.Don.	Taraful	Apocynaceae	Leaf	Leaf extract is used as anti-diabetic.
21	<i>Centella asiatica</i> (L.) Urban	Thankuni, Adadhulkun	Apiaceae	Leaf	Leaf extract is used in amoebic dysentery.
22	<i>Cissus quadrangularis</i> L.	Harjora	Vitaceae	Whole plant	Plant paste is used in bone fracture.
23	<i>Citrus aurantifolia</i> (Chris.) Swin.	Pati lebu	Rutaceae	Fruit	Fruit juice is used in dyspepsia.
24	<i>Citrus maxima</i> (Burm.f.) Osbeck	Batabi lebu	Rutaceae	Fruit	Fruit juice is used in jaundice.
25	<i>Clerodendrum inerme</i> (L.) Gaertn	Bhat	Verbenaceae	Leaf	Young leaf extract is used as anti-helminthic.
26	<i>Coccinia grandis</i> (L.) Voigt	Telakuch	Cucurbitaceae	Leaf	Leaf extract is used in fungal infection of skin.
27	<i>Cocos nucifera</i> L.	Narkel	Arecaceae	Fruit	Endosperm is used in maintaining ionic balance.
28	<i>Colocasia esculenta</i> (L.) Schott	Kachhu	Araceae	Leaf	Juice of petiole is used to stop bleeding.
29	<i>Croton bonplandianum</i> Baill.	Bon Tulsi	Euphorbiaceae	Stem	Latex is used in skin infection.
30	<i>Curcuma longa</i> L.	Haldi	Zingiberaceae	Rhizome	Paste is applied in skin care
31	<i>Cynodon dactylon</i> (L.) Pers	Durba	Poaceae	Whole plant	Decoction is used in dysentery and skin infection.
32	<i>Datura metal</i> L.	Dhutura	Solanaceae	Leaf	Leaf paste is used in joint pain.
33	<i>Eclipta prostrata</i> (L.) L.	Keshria	Asteraceae	Leaf	Extract is used to stop bleeding.
34	<i>Ficus benghalensis</i> L.	Bot	Moraceae	Bark	Young stem bark extract is used in skin infection.
35	<i>Foeniculum vulgare</i> Mill.	Mouri	Apiaceae	Fruit	Decoction is used in dyspepsia

36	<i>Glinus oppositifolius</i> (L.) A. Dc.	Geema	Molluginaceae	Whole plant	Decoction is used for skin itching
37	<i>Glycosmis pentaphylla</i> (Retz.) DC.	Atiswar	Rutaceae	Root	Root extract is used in dog biting.
38	<i>Heliotropium indicum</i> L.	Hatisur	Boraginaceae	Leaf	Leaf extract is used in skin injury.
39	<i>Hibiscus rosa-sinensis</i> L.	Joba	Malvaceae	Flower	Extract is used for hair growth.
40	<i>Hygrophila auriculata</i> (Schumach) Heine	Kulekhara	Acanthaceae	Leaf	Decoction is used in anemia.
41	<i>Kalanchoe pinnatum</i> (Lam.) Pers.	Patharkuchi	Crassulaceae	Leaf	Decoction of leaf used in gall and kidney stone.
42	<i>Leucas aspera</i> (Willd.) Link	Dulfi	Lamiaceae	Leaf	Leaf extract is taken in mouth infection
43	<i>Mangifera indica</i> L.	Aaam	Anacardiaceae	Bark	Young stem bark extract is taken during bloody dysentery.
44	<i>Mentha arvensis</i> L.	Pudina	Lamiaceae	Leaf	Leaf extract is used in acidity.
45	<i>Mimosa pudica</i> L.	Lajjaboti	Fabaceae	Root	Root extract is used in gum infection.
46	<i>Momordica charantia</i> L.	Karola	Cucurbitaceae	Fruit	Extract is taken in diabetes.
47	<i>Moringa oleifera</i> Lam.	Sojne	Moringaceae	Leaf	Decoction of leaf reduced high blood pressure
48	<i>Musa sapientum</i> L.	Kola	Musaceae	Fruit	It is used in constipation
49	<i>Neolamarekia cadamba</i> (Roxb.) Bosser.	Kadam	Rubiaceae	Leaf	Decoction is used in mouth infection.
50	<i>Nyctanthes arbor-tristis</i> L.	Shiuli	Oleaceae	Leaf	Leaf extract is used as anti-pyrogenic agent.
51	<i>Ocimum tenuiflorum</i> L.	Tulsi	Lamiaceae	Leaf	Leaf extract is taken with honey for cold and cough.
52	<i>Oxalis corniculata</i> L.	Amrul	Oxalidaceae	Leaf	Decoction is used in dysentery.
53	<i>Paederia foetida</i> L.	Gandhabhadule	Rubiaceae	Leaf	Leaf paste is used as carminative.
54	<i>Persicaria glabra</i> (Willd.) M. Gomez	Bistali	Polygonaceae	Whole plant	Paste is applied in joint pain.
55	<i>Phyllanthus emblica</i> L.	Amloki	Phyllanthaceae	Fruit	It is taken during acidity and other abdominal complain.

56	<i>Piper betle</i> L.	Pan	Piperaceae	Leaf	Leaf extract is used for digestion.
57	<i>Piper longum</i> L.	Pipul	Piperaceae	Root	Decoction of root in cold and cough.
58	<i>Piper nigrum</i> L.	Golmorich	Piperaceae	Seed	Dust is used in cough.
59	<i>Psidium guajava</i> L.	Peyara	Myrtaceae	Leaf	Young leaf extract is used for gum care.
60	<i>Ricinus communis</i> L.	Reri	Euphorbiaceae	Seed	Seed oil is used in joint pain.
61	<i>Saccharum officinarum</i> L.	Kushial	Poaceae	Stem	Stem extract is used in jaundice.
62	<i>Scoparia dulcis</i> L.	Chinipata	Scrophulariaceae	Leaf	Leaf extract is applied to stop bleeding.
63	<i>Smilax zeylanica</i> L.	Gahakant	Smilacaceae	Stem	Aqueous extract is taken in jaundice.
64	<i>Solanum xanthocarpum</i> Schrad & H. Wendl.	Kantikari	Solanaceae	Whole plant	Decoction of whole plant is taken during chicken pox
65	<i>Swietenia mahagoni</i> L.	Mehagini	Meliaceae	Seed	Seed dust is used in diabetes.
66	<i>Syzygium cumini</i> (L.) Skeels	Jam	Myrtaceae	Seed, Leaf	Seed dust is used in diabetes. Leaf extract is used as antiemetic.
67	<i>Tagetes patula</i> L.	Gandha	Asteraceae	Leaf	Leaf extract is used to stop bleeding from wound.
68	<i>Terminalia arjuna</i> (Roxb.ex DC) Wt. & Arn.	Arjun	Combretaceae	Bark	Infusion of young stem bark is used in heart and respiratory problems.
69	<i>Terminalia bellirica</i> (Gaertn) Roxb.	Bahera	Combretaceae	Fruit	Dust is taken in acidity and constipation.
70	<i>Terminalia chebula</i> Retz.	Horitoki	Combretaceae	Fruit	Dust is taken in acidity and constipation.
71	<i>Tinospora cordifolia</i> (Thunb.) Miers.	Gulanha	Menispermaceae	Whole plant	Infusion of whole plant is used as febrifuge.
72	<i>Zingiber officinale</i> Roxb.	Ada	Zingiberaceae	Rhizome	Small pieces of rhizome are taken with table salt in throat infection

Table.2 Percentage of plant species curing different disorders

Nature of Health Problems	Percentage of Plant species
Cardiac	3
Dental and Oral	8
Dermal	18
Endocrinal	6
Gastrointestinal	33
Hematological	9
Neural	1
Orthopedic	1
Respiratory	8
Rheumatic	6
Urogenital	5
Viral	3

Fig.1 Percentage of used parts of medicinal plants (Bar diagram)

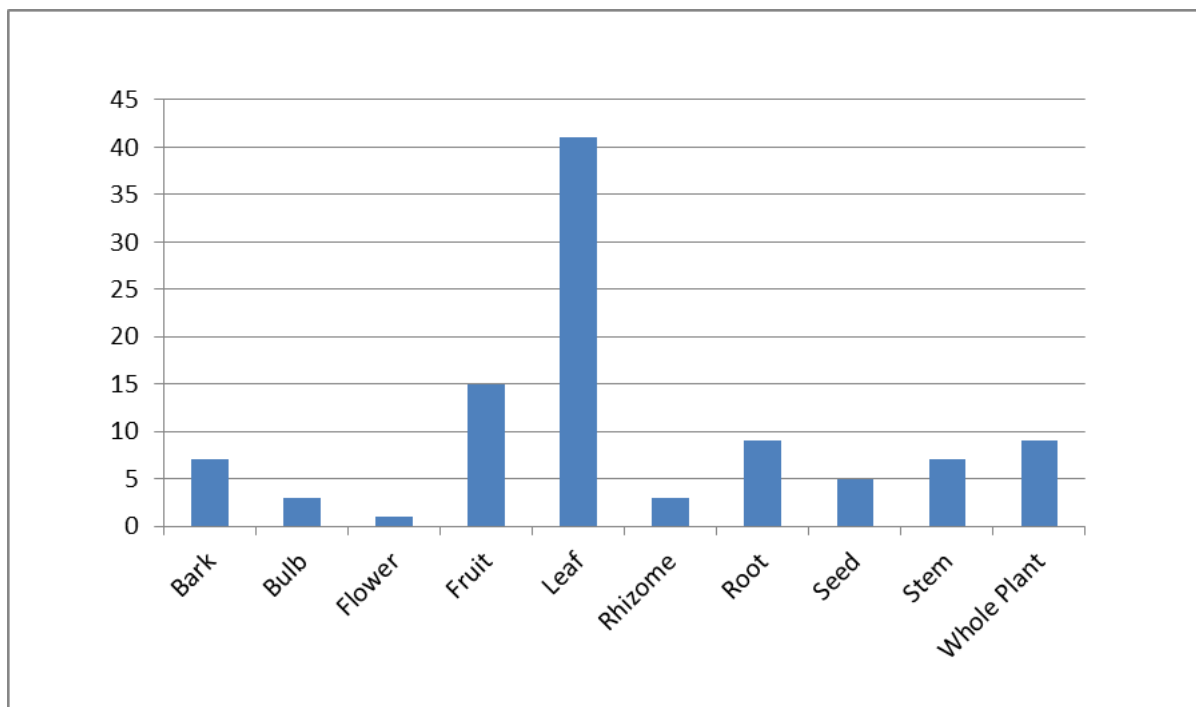
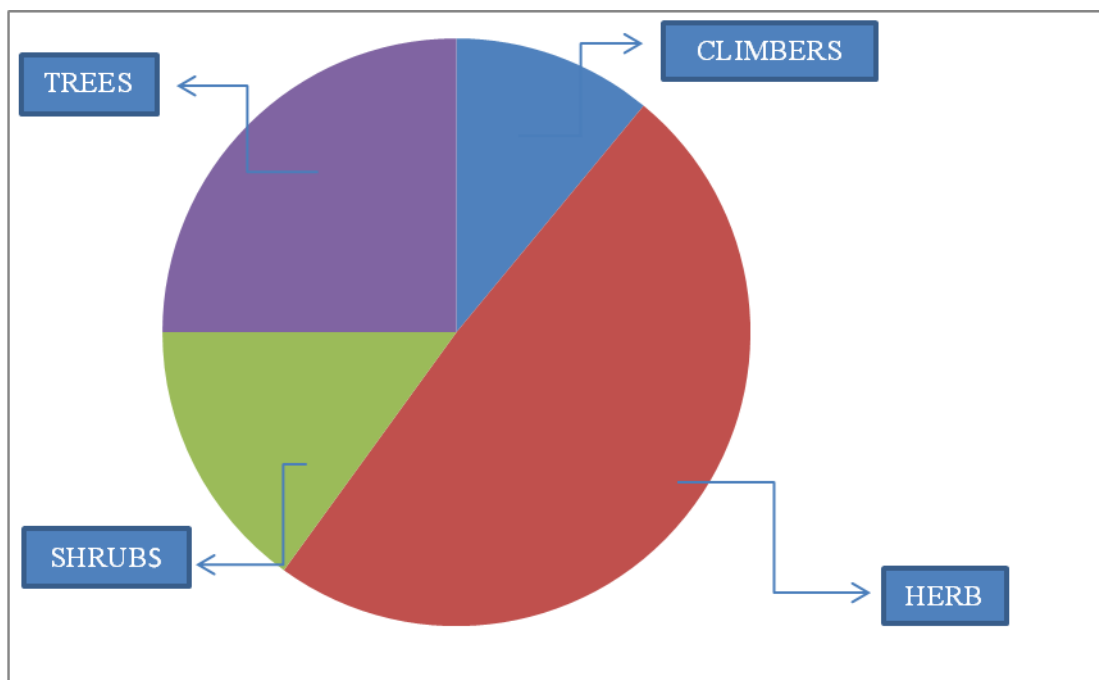


Fig.2 Nature of medicinal plants (Pie chart)



Statistical analysis regarding the uses of medicinal plants for curing of different ailments explores that majority of plants are used in gastrointestinal problems (33%), followed by dermal (18%), hematological (9%), oral and dental (8% in each), endocrinal and rheumatic (6% in each), urogenital (5%), cardiac and viral (3% in each) and 1% in each for neural and orthopedic problems (Table 2).

A comprehensive study shows that 95 plant species have medicinal value in Hazaribag district of Jharkhand (Lal and Singh, 2012). It is previously reported that 81% plants have been used against gastrointestinal disorders by tribe community in North Tripura district (Das and Dutta Choudhury, 2010). We have noticed in our investigation that majority of plant species have been used for curing of gastrointestinal disorders like acidity, constipation, dysentery, dyspepsia, flatulence, jaundice, indigestion etc. Ethnobotanical data at Mokhada of Thane district shows, the plants like *Curculigo orchoides*, *Hygrophila spinosa*, *Tinospora cordifolia* and *Wrightia tinctoria* have been used for impotency, jaundice, diabetes and gall stone (Sonawane, 2012). In our data we have found *Hygrophila auriculata* and *Tinospora cordifolia* are used in anemia and fever in regular fashion. *Abroma augusta* and *Bombax ceiba* have been used in azoospermia. Gall and kidney stone are dissolved by *Kalanchoe pinnatum*. The taxonomic data obtained from the study on Phulbari Upazila of Dinajpur

district, Bangladesh shows great similarities with the result generated by our study (Uddin *et al.*, 2006).

Conclusion

This investigation elegantly shows that the rural people of study area are greatly dependent on medicinal plants for curing of several ailments on the basis of their natural prudence. Intricate analysis of the result depicted by several statistical analyses prove that majority of plants parts have been regularly used in curing of gastrointestinal problems.

This study shows that a single species is used for curing and healing of various disorders and vice versa. To protect these species from extinction by over use, a stringent conservation policy for the same should have been formulated and implemented with utmost necessity. Our study opens up a new vista for future research on these species to extract and analysis of phytochemicals from the same that greatly facilitates to understand their biochemical and molecular nature for drug designing.

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