

Ethno-medicinal investigation on ethnic community in the northern region of Bangladesh

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Abstract: The present ethno-medicinal investigation has been carried out into ethnic communities of 12 Upazillas under six districts in the northern region of Bangladesh. A total of 24 species under 13 genera of the family Cucurbitaceae collected and recorded for their use in various ailments. For each species botanical name, local name, parts used, name of the diseases and mode of uses have been mentioned.

Keywords: Ethno-Medicine, Cucurbitaceae, Ethnic Community, Northern region, Bangladesh

1. Introduction

Ethno-medicine is a sub-field of ethno-botany or medical anthropology that deals with the study of traditional medicines: not only those that have relevant written sources (e.g. Traditional Chinese Medicine, Siddha, Ayurveda), but especially those, whose knowledge and practices have been orally transmitted over the centuries. In the scientific arena, ethno-medical studies are generally characterized by a strong anthropological approach, or by a strong biomedical approach, particularly in drug discovery programs. The focus of anthropological studies is the perception and context of use of traditional medicines[1].

Ethno-medicine practices are becoming a rising new trend in urban areas. With the migration of individuals from diverse geographical locations, metropolitan cities are starting to see a sudden increase in the amount of traditional healing clinics. For example, New York City has a large population of Dominican healers. These healers migrated to the United States bringing their native traditions and healing processes with them. Their healing processes generally consist of botanical therapies, herbal remedies and native ethno-medical knowledge. As the Dominican community increases in population within New York City, there is a greater desire for natural medicine; one limitation to their ability to prescribe treatment is the accessibility to plants. Some of these plants are not locally grown and therefore are imported or the plants can only be found in dried form[18].

Studies on ethno-medicinal information of ethnic communities in Bangladesh are at initial stage. Several ethno-medicinal studies in Bangladesh have been carried out by Alam[3]; Hassan and Khan[10]; Anisuzzaman et al.[4]; Rahman et al.[12-14]; Rahman[16, 17]; Uddin et al.[19-23]; Khan[9] and Yusuf et al. [24, 25] are only a few to mention. The work on the ethno-medicine of ethnic community is lacking. That is why in the present survey an attempt has been made with the following objectives: i) to identify the medicinal plants, their local name, parts used and diseases to be treated, ii) to identify the threats to medicinal plants, and their habitats, iii) to make recommendation for conservation measures.

2. Materials and Methods

In the present ethno-medicinal survey, a total of 24 species belonging to 13 genera of the family Cucurbitaceae were collected and identified. Data of medicinal use of plants were collected through interview with local herbal practitioners (kabiraj/Boidya), headmen and elderly persons in the community using, semi structured questionnaire at different locations. Data collections from one person were verified with others by asking the same questions. Most of the medicinal plants were identified in the field and in case of unknown, plant specimens were collected. These specimens were brought to Rajshahi University Herbarium and processed by traditional herbarium techniques. These were examined and identified by comparing herbarium specimens and also consulting

literatures. Threats to medicinal plants and their habitats were also noted from the field observations. Herbal plants referred by these people were authentically identified with the help of Hooker[6], Prain[11], Khan and Huq[8], Kirtikar and Basu[7], Rahman et al.[15] and Ahmed et al.[2]. The voucher specimens are stored at Rajshahi University Herbarium (RUH) for future reference.

3. Results and Discussion

In the present ethno-medicinal survey, a total of 24 plant species under 13 genera of the family Cucurbitaceae were collected and recorded for their use in various ailments. For each species local name, scientific name, ailments to be treated, mode of treatment and part(s) used are provided (Table 1).

Table 1. List of plants and their diversity in use of medicinal purposes by the ethnic community in the northern region of Bangladesh.

S/N	Scientific name	Local name	Part(s) used	Ailments	Treatment process
1	<i>Benincasa hispida</i> (Thunb.) Cogn.	Chal kumra, sada kumra, chuna kumra	Fruits, Seeds	Tonic, nutritive, diuretic, constipation, heart disease, tuberculosis, colic pain, aphrodisiac. tape worm.	Taken curry made from fruits, also applied fried seeds
2	<i>Citrullus lanatus</i> (Thunb.) Mart & Nakai.	Turmuz	Fruit, seeds	Cooling, strengthening, diuretic, stomachic, purifies the blood, aphrodisiac, scabies, sore eyes, astringent, biliousness, itching, typhus fever, purgative, tonic to the brain.	Applied ripe fruits, also taken both fruit and seed juice
3	<i>Coccinea grandis</i> (L.) Voigt.	Telackucha	Whole plant, fruit, leaves, roots, stem	Diabetes, asthma, aphrodisiac, biliousness, disease of the blood, fever, dropsy, epilepsy, gonorrhoea, snake-bite.	Taken fruits curry, also taken whole plant juice. Applied fresh juice of leaves, stem and root, also taken both of fruit and leaves paste.
4	<i>Cucumis sativus</i> L.	Sasha, Khira	Leaves, fruits, seeds	Demulcent, cooling, tonic, diuretic, anthelmintic, throat infections.	Taken young fruits, fried seeds, also applied leaves along with cumin seeds
5	<i>Cucumis melo</i> L.	Phuti, Kurbuz	Bangi, Fruits, seeds	Kidney diseases, cooling, tonic, laxative, aphrodisiac, biliousness, diuretic, acute eczema, nutritive, beneficial to the enlargement to prostate gland.	Applied ripe fruits, also taken fried seeds.
6	<i>Cucumis callosus</i> L.	Bangumak	Fruits, seeds	Strong memory, remove vertigo, cooling, astringent, bilious disorder.	Taken ripe and unripe fruits, also applied fried seeds
7	<i>Cucurbita maxima</i> Duch.	Bitati, mistikumra	Fruit, seeds	Diuretic, tonic, inflammations, boils, anthelmintic.	Applied unripe and ripe fruits, also taken fried seeds
8	<i>Cucurbita pepo</i> L.	Mistikadu, Bilati	Fruits, leaves, seeds	Cooling, astringent, laxative, toothache, throat infections, eyes sores, biliousness, burning sensation, diuretic, tonic, bronchitis, fever, good for the kidney and the brains.	Taken ripe fruits, leaves paste, also applied fried seeds
9	<i>Cucurbita moschata</i> (Duch. ex Lam.) Duch.	Mistikadu, Bilati	Leaves, fruits, seeds	Biliousness, burning sensation, cooling, astringent, laxative, good for teeth, throat, eyes, diuretic, tonic, bronchitis, fever, good for the kidney and the brains.	Taken leaves paste, also applied ripe and unripe fruits and fried seeds
10	<i>Diplocyclos palmatus</i> (L.) Jeffrey	Mala	Whole plant	Bitter and tonic.	Applied whole plant juice
11	<i>Gymnopetalum cochinchinense</i> (Lour.) Kurj.	Kaubuti	Leaves, fruit, root, Whole plant	Ophthalmia, tetanus, miscarriage, menstrual problems, bodyache.	Taken leaves juice, also applied fruits and root decoction, whole plant and root juice
12	<i>Lagenaria siceraria</i> (Molina) Standl.	Panilau, Panikadu	Lau, Leaves, fruits, roots, stem, seeds	Cooling, emetic, purgative, diuretic, cholera, headache, nutritive, jaundice, earache.	Taken white fruit pulp and curry, also taken fried seeds and oil, applied leaves decoction mixed with sugar
13	<i>Luffa acutangula</i> (L.) Roxb.	Toroy, Jhinga	Leaves, fruits, seeds	Hemorrhoids, diuretic, leprosy, conjunctivitis, demulcent, nutritive.	Applied pounded leaves, also applied leaves juice and young fruits curry
14	<i>Luffa cylindrica</i> (L.) Roem.	Dhundol	Fruits, seeds	Cooling, demulcent, appetite, emetic and cathartic.	Applied young fruits, also applied fried seeds
15	<i>Melothria maderaspatana</i> (L.) Cogn.	Agmuki	Roots	Spermatorrhoea, stimulant, purgative and gonorrhoea.	Taken root juice
16	<i>Momordica cochinchinensis</i> (Lour.) Spreng	Kakrol	Leaves, fruits, seeds	Lumbago, ulcers, fracture of bones, aperients, ear sores, obstructions of liver and spleen, rheumatism with swelling of the lower limbs.	Applied both of leaves and fruits paste, also fried seeds, also applied root juice
17	<i>Momordica</i>	Karala	Fruit, root,	Tonic, stomachic, febrifuge, carminative,	Taken young fruits, fried seeds, also

	charantia L.			leaves, seeds, whole plant	gout, cooling, rheumatism, disease of liver and spleen, anthelmintic, colic, fever, diabetes, piles, leprosy, jaundice and vermifuge.	taken whole plant extract and juice. Applied fruits and leaves paste, also applied leaves, root and stem paste
18	Momordica dioica Roxb.	Gheekorolla	Root		Bleeding piles, urinary complaints, sedative, fever.	Taken toasted root, also taken root paste
19	Thladiantha cordifolia Cogn.	(BL.) Dabilata	Root, seeds		Cardiac tonic, astringent, alterative, cholagogue, diuretic, galactagogue.	Taken fried seeds, also applied roots decoction
20	Trichosanthes cordata Roxb.	Bhuikakra	Root		Tonic, enlargements of the spleen, liver and abdominal viscera, leprosy ulcers.	Applied roots powder, also applied fresh root mixed with oil
21	Trichosanthes dioica Roxb.	Potol	Fruits, leaves		Cooling, febrifuge, laxative, spermatorrhoea, aperients, tonic, enlarge liver and spleen.	Taken unripe fruit juice, also taken leaves juice
22	Trichosanthes anguina L.	Chichinga	Fruit, root, seed		Laxative, tonic, anthelmintic, diarrhea, biliousness, syphilis.	Taken young fruits, also taken both of root and seed decoction
23	Trichosanthes bracteata (Lamk.) Voigt.	Makal, Makalpal	Fruit, seed, root		Asthma, earache, carminative, bitter, purgative, abortion, lessens inflammations, emetic, ear sores and nostrils, headache.	Taken ripe fruits, also taken seeds juice Applied fruit punded and well mixed with warm coconut oil, also applied both of fruit and root juice boiled with gingelly oil
24	Trichosanthes cucumerina L.	Banchichinga	Root, seed, fruit, leaves		Bronchitis, headache, boils, cooling, liver disease, biliousness, headache, purgative, appetite, emetic, anthelmintic, worms, diarrhea and syphilis.	Applied roots paste, also applied seeds juice. Taken both of leaves and fruits juice, also taken both of roots and seeds decoction

Table 2. Number of plant parts use of medicinal purpose.

S/N	Name of plant parts	Use of plant parts	Percentage (%)	Total number plant species
1	Fruits	19	79.16	24
2	Seeds	17	70.83	24
3	Roots	11	45.83	24
4	Leaves	11	45.83	24
5	Whole plant	4	16.66	24
6	Stem	2	8.33	24

Use of plant parts as medicine shows variation. Fruits (79.16%) are the leading part used in a majority of medicinal plants followed by 70.83% seeds, 45.83% roots, 45.83% leaves, 16.66% whole plant and 8.33% stem (Table 2). The survey has also recorded 78 categories of uses of 24 medicinal plants (Table 3). This is the indication of rich knowledge of medicinal uses of plants by the tribal people in the study area. Among them, 10 species were used to cure for each of tonic, cooling and diuretic, 7 species for biliousness, 6 species for fever, 5 species for each of astringent, purgative and anthelmintic. Thirty categories of ailments were treated by two to four species and other forty categories of ailments were treated by only one species.

The survey has also recorded 78 categories of uses of 24 medicinal plants. This is the indication of rich knowledge of medicinal uses of plants by the ethnic community in the study area. Use of species in different ailments showed also variations (Table 1). *Momordica charantia* L. has been used for treatment of 17 ailments; *Trichosanthes cucumerina* L., *Cucurbita pepo* L. and *Cucurbita moschata* (Duch. ex Lam.) Duch. has been used for treatment of 14 ailments in each. *Trichosanthes bracteata* (Lamk.) Voigt.

Has been used for treatment of 11 ailments; *Cucumis melo* L. and *Coccinea grandis* (L.) Voigt. has been used for treatment of 10 ailments in each. *Benincasa hispida* (Thunb.) Cogn. and *Lagenaria siceraria* (Molina) Standl. has been used for treatment of 9 ailments in each., *Momordica cochinchinensis* (Lour.) Spreng. and *Trichosanthes dioica* Roxb. has been used for treatment of 8 ailments in each. For treating two to six ailments 13 species were used. Among the medicinal use of plants, the survey reported a good number of new uses those were not mentioned in the previous literatures[26] [5].

From the available information it is revealed that this ethnic community used plant species, which are not generally used by other population. Data have been gathered on the traditional uses of plant species, especially for asthma, anthelmintic, astringent, burning sensation, constipation, conjunctivitis, diarrhea, diabetes, eczema, earache, fever, fracture, gonorrhoea, headache, heart disease, itches, jaundice, kidney disease, leprosy, piles, scabies, snake-bite, spermatorrhoea, syphilis, throat affection, ulcers, vertigo, worm and others.

From the present observation in the northern region of Bangladesh, I have come up with some recommendation measures for the conservation of medicinal plants and their habitat. Traditional ethnic knowledge about the usage of medicinal plants should be properly recorded and documented. Apart from several threats some Sal patches of the study area still merit for *in situ* conservation. Otherwise *ex-situ* conservation sites including medicinal plant garden, protected area and eco-park should be established. Awareness about the importance of medicinal plants should be created among the local people, developers, energy companies and policy makers. Environmental impact assessment should be done before going to undertake any mining and developmental projects.

Compensation measures should be ensured from companies for damaging the medicinal plants and their habitats.

These commonly used Cucurbitaceae plant species are arranged in alphabetical order followed by their scientific name, local name, part(s) used, ailments and treatment process.

Table 3. Number of medicinal plants used in different categories of ailments.

S/N	Categories of ailments	Number of species	Percentage (%)	Total number of species
1	Tonic	10	41.66	24
2	Nutritive	4	16.66	24
3	Diuretic	10	41.66	24
4	Heart disease	1	4.16	24
5	Constipation	1	4.16	24
6	Tuberculosis	1	4.16	24
7	Colic pain	2	8.33	24
8	Aphrodisiac	4	16.66	24
9	Tape worm	1	4.16	24
10	Ear sores	2	8.33	24
11	Cooling	10	41.66	24
12	Strengthening	1	4.16	24
13	Stomachic	2	8.33	24
14	Purifies the blood	2	8.33	24
15	Astringent	5	20.83	24
16	Biliousness	7	29.16	24
17	Sore eyes	2	8.33	24
18	Scabies	1	4.16	24
19	Itching	1	4.16	24
20	Fever	6	25.00	24
21	Purgative	5	20.83	24
22	Diabetes	2	8.33	24
23	Asthma	2	8.33	24
24	Dropsy	1	4.16	24
25	Epilepsy	1	4.16	24
26	Gonorrhoea	2	8.33	24
27	Bilious disorder	1	4.16	24
28	Snake-bite	1	4.16	24
29	Demulcent	3	12.50	24
30	Anthelmintic	5	20.83	24
31	Throat infection	2	8.33	24
32	Kidney disease	3	12.50	24
33	Laxative	3	12.50	24
34	Eczema	1	4.16	24
35	Prostate gland infection	1	4.16	24
36	Vertigo	1	4.16	24
37	Inflammations	2	8.33	24
38	Boils	2	8.33	24
39	Burning sensation	2	8.33	24
40	Bronchitis	3	12.50	24
41	Bitter	2	8.33	24
42	Ophthalmia	1	4.16	24
43	Miscarriage	1	4.16	24
44	Body ache	1	4.16	24
45	Menstrual problems	1	4.16	24
46	Emetic	4	16.66	24

47	Jaundice	1	4.16	24
48	Head ache	2	8.33	24
49	Ear ache	1	4.16	24
50	Cholera	1	4.16	24
51	Hemorrhoids	1	4.16	24
52	Leprosy	1	4.16	24
53	Conjunctivitis	1	4.16	24
54	Appetite	2	8.33	24
55	Cathartic	1	4.16	24
56	Spermatorrhoea	2	8.33	24
57	Stimulant	1	4.16	24
58	Lumbago	1	4.16	24
59	Ulcers	2	8.33	24
60	Bone fracture	1	4.16	24
61	Aperients	2	8.33	24
62	Liver disease	4	16.66	24
63	Spleen disease	3	12.50	24
64	Rheumatism	2	8.33	24
65	Febrifuge	1	4.16	24
66	Carminative	1	4.16	24
67	Piles	2	8.33	24
68	Vermifuge	1	4.16	24
69	Alterative	1	4.16	24
70	Cholagogue	1	4.16	24
71	Galactagogue	1	4.16	24
72	Abdominal disease	1	4.16	24
73	Diarrhea	2	8.33	24
74	Syphilis	1	4.16	24
75	Nostrils	1	4.16	24
76	Worms	1	4.16	24
77	Abortion	1	4.16	24
78	Toothache	1	4.16	24

4. Conclusion

The present findings are probably the new record of ethno-medicinal knowledge for northern region of Bangladesh using standard research protocols. The present study may be a preliminary contribution to the ethno-medicine of this area using standard research methods, focusing on medicinal plants and their local uses for the healthcare. This healthcare knowledge transmitted orally from one generation to generation. The study also suggested that the present information on medicinal use of plants by ethnic community may be used for botanical and pharmacological research in future for the discovery of new sources of drugs.

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