



Traditional Practices, Formulations and Dosages of Medicinal Plants: A Survey in Faridpur District of Bangladesh

RACHANA SIKDER

Department of Botany, Government Hossain Shahid Suhrawardy College, Magura, Bangladesh

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Corresponding Author

Rachana Sikder

Contact:

rachanasikder@gmail.com

ABSTRACT: Nature is a storehouse of enormous remedies and plants, as a part of nature, have a long history of cured different ailments of human beings. The present ethnobotanical survey found that the people of Faridpur district preferred a total of 26 plant species for their traditional healthcare systems. The recorded plant species were belongs to 22 families, and only Asteraceae, Euphorbiaceae and Piperaceae families possess more than one species to use. As for plant habits, 62% of species on the list were herbaceous and tree. Leaves and fruits were mostly useable parts as traditional medicines. The highest number of ailments for traditional practice was found related to skin problems (19%) following external injury (15%) and stomach related problems (13%). The amount of dosages and the mode of application also were included in this report. In total 52 traditional practices with 7 new records from Bangladesh were listed. Moreover, the new generations were found to be comparatively less interested in traditional health care systems than the older people. It was the first attempt to explore the traditional values of some medicinal plants with their mode of applications from this region.

Keywords: Traditional medicine, Medicinal plants, Formulations, Faridpur, Bangladesh.

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Plants are considered a basic entity of nature due to their fundamental supports to sustain all forms of life. As a part of nature, they have been used as medicine for thousands of years to cure ailments of human beings (1). It is conspicuous from fossil records that said the Neanderthal people practiced enormous plants as treatments for different ailments, which is termed traditional medicine or ethnomedicine specifically in this modern era (2,3). Although animals and plants both are used as

traditional medicine by local people of different regions or cultures, plants kingdom shows dominancy over any other sources. Almost 80% of the world population depended on medicinal plants for their primary healthcare, and the scenario was 65 to 80% in developing countries (4,5). In the case of rural areas, people were more dependent on these medicine systems for various physical and mental cures than in any other region (6).



According to Evan, plants derived natural products are gaining more attention for therapeutic use than synthetic drugs because of their minimum side effects (7). Besides, the medicine formulation techniques from plants are easier than the formulations of synthetic drugs. Plant-derived medicine is used as either direct application or the use as crude extracts viz. tinctures, teas, poultices, powders, and other formulations, while it is mandatory to follow some rules in case of taking synthetic drugs (1,8). There are lots of biologically active compounds found in medicinal plants which are easy to extract in traditional ways. Thus the acquired knowledge of medicinal plants and their traditional practices with scientific formulations are helping the researcher to discover modern drugs nowadays. For example, the anti-malarial drug Arteether is derived from *Artemisia annua*, a plant which was used for traditional medicine in China; Alzheimer's treating medicine Galantamine is extracted from *Galanthus woronowii* from Russia; Cancer treating drug Silvestrol was isolated from *Aglaia sylvestris* from Indonesia (9-11).

However, plant-based medicines have been preferred in many developed countries as prescribed drugs now than previous, and approximately one-third of prescriptions contain plant-based natural products in the USA, for example (12). In Bangladesh, Ayurveda, Unani, herbal, and other folklore medicines have been extensively used in public health care for many years as alternative medicine systems. Even, these are very competitive in case of various diseases in this country. Previously, scientists conducted several surveys on traditional practices of medicinal plants in Bangladesh, but most of the research data were on the identification and listing of the medicinal plants they found (13-18). The data on traditional practices of medicinal plants of the Faridpur district of Bangladesh is not so much rich.

Therefore, this study investigated the Faridpur district to record the practices, formulations along with doses of some medicinal plants from the local traditional practitioners and some other permanent residents from different aged groups to cure different ailments. The investigation was also surveyed the existing status of local people of the district on the preference of traditional healthcare practices.

MATERIALS AND METHODS

Study area

The district Faridpur is located in the southern central part of Bangladesh surrounded by Gopalganj, Madaripur, Rajbari, and Shariatpur districts. It covers an area of 2072.72 square kilometers and stands at the bank of the Padma River. Moreover, its geographical location is in between 23°17' and 23°40' north latitudes, and in between 89°29' and 90°11' east longitudes (Figure 1). The district consists of 9 Upazilas and 1899 villages. It has more than 2.0 million people, where almost 1.4 million live in rural areas (19).

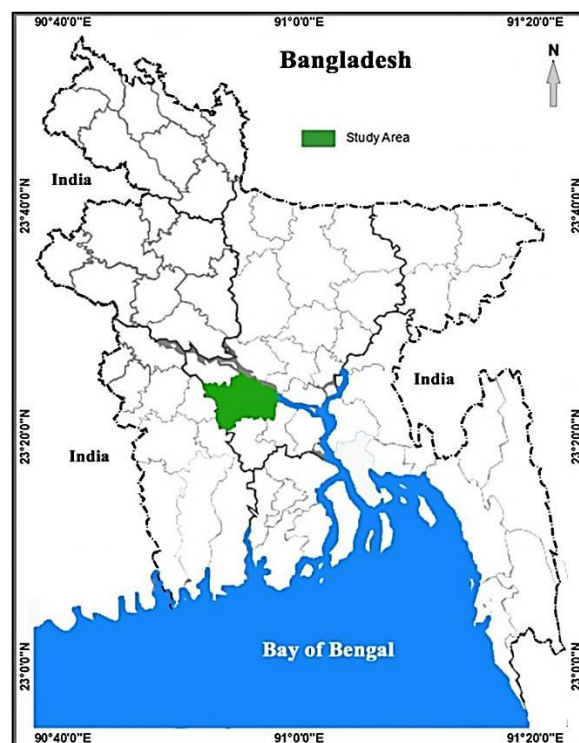


Figure 1. Map of Bangladesh showing study area marked in green color.

Data collection

A series of field surveys were conducted in order to collect information about the traditional uses of medicinal plants by the local inhabitants from May 2018 to June 2020. The information was obtained through semi-structured interviews with knowledgeable local farmers, plants collectors, healers, herbal dealers, and elderly persons. The overall age range of the informants was 25 to 70 years. All the information regarding plant species, local names, habitat, usable parts, practices, formulations, dosages, and mode of applications were noted in the documentation datasheets.

Identification

Collected medicinal plants specimens were processed according to Alexiades standard protocol

(20). Then the specimens were identified and described with the help of the following renowned literatures (21-24).

RESULTS AND DISCUSSION

In this survey, a total of 26 medicinal plants were enlisted with their brief descriptions and traditional practices under 22 families from the Faridpur district of Bangladesh (Table 1). Among these plants,

herbs (31%) and trees (31%) were the predominant flowering shrubs and vines (Figure 2). In total, 52 traditional practices and formulations were listed during the survey, but the common ailments were hair treatment, dysentery, stomachache, fever, cough, vomiting, skin problems, diabetes, external injury, heart diseases, mouth-related problems, and others.

Table 1. List of medicinal plants with their brief descriptions found in Faridpur district.

SL	Scientific name	Local name	Family	Habit	Part used
1	<i>Zingiber officinale</i> L.	Ada	Zingiberaceae	Herb	Rhizome
2	<i>Phyllanthus emblica</i> L.	Amlaki	Euphorbiaceae	Tree	Fruit
3	<i>Terminalia arjuna</i> (Roxb.) W & A	Arjun	Combretaceae	Tree	Bark
4	<i>Psidium guajava</i> L.	Peyara	Myrtaceae	Tree	Leaf
5	<i>Punica granatum</i> L.	Dalim	Punicaceae	Tree	Fruit
6	<i>Saraca indica</i> L.	Ashoke	Caesalpiniaceae	Tree	Bark
7	<i>Solanum nigrum</i> L.	Titbegun	Solanaceae	Shrub	Fruit
8	<i>Swertia perennis</i> L.	Chirata	Gentianaceae	Herb	Root
9	<i>Tagetes erecta</i> L.	Gadaful	Asteraceae	Herb	Leaf, Flower
10	<i>Piper longum</i> L.	Pipul	Piperaceae	Shrub	Leaf
11	<i>Justicia adhatoda</i> L.	Bashak	Acanthaceae	Shrub	WP, Leaf
12	<i>Ocimum sanctum</i> L.	Tulshi	Lamiaceae	Shrub	Leaf
13	<i>Lablab purpureus</i> (L.) Sweet	Shim	Fabaceae	Vine	Leaf
14	<i>Lawsonia inermis</i> L.	Mehedi	Lythraceae	Shrub	Leaf
15	<i>Momordica charantia</i> L.	Korolla	Cucurbitaceae	Vine	Fruit
16	<i>Nigella sativa</i> L.	Kalijeera	Ranunculaceae	Herb	Seed
17	<i>Piper betle</i> L.	Pan	Piperaceae	Vine	Leaf
18	<i>Acalypha indica</i> L.	Muktajhuri	Euphorbiaceae	Herb	Leaf
19	<i>Alstonia scholaris</i> (L.) Br.	Chatim	Apocynaceae	Tree	Gum
20	<i>Areca catechu</i> L.	Supari	Arecaceae	Tree	Seed
21	<i>Azadirachta indica</i> A..Juss	Neem	Meliaceae	Tree	Leaf, Bark
22	<i>Colocasia esculenta</i> (L.) Schott	Kachu	Araceae	Herb	Petiole, WP
23	<i>Cynodon dactylon</i> (L.) Pers.	Durba	Poaceae	Herb	Whole plant
24	<i>Hibiscus Rosa- sinensis</i> L.	Joba	Malvaceae	Shrub	Flower
25	<i>Mikania micrantha</i> Kunth	Asamlata	Asteraceae	Vine	Leaf
26	<i>Spilanthes acmella</i> Murr.	Nakful	Asteraceae	Herb	Leaf, Inflorescence

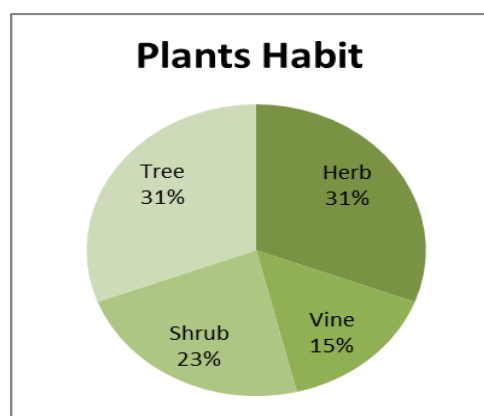


Figure 2. Habit of recorded plants as percentage.

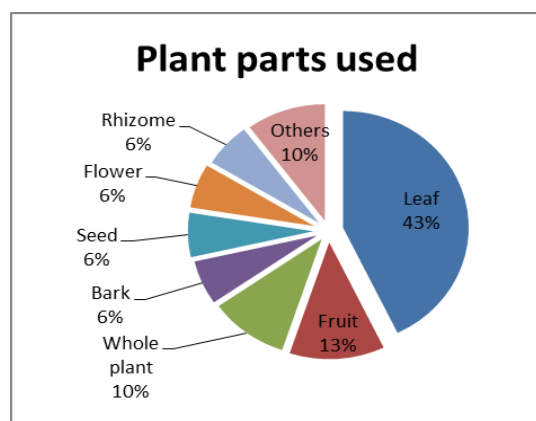


Figure 3. Number of plant parts used for treatment.

Table 2. The traditional practices, formulations and dosages of the listed medicinal plants. Here, (*) indicates the new report of traditional practices.

SL	Traditional Practices	Formulations (Ration)	Dosages (Daily)	Mode
1	Cough	Rhizome, hot water and honey mixed (Equally)	1 cup, 4-6 times	Oral
	Gastric	Dry rhizome powder only	¼ spoon, 4 times	Oral
	Flu*	Rhizome paste mixed with hot water (1:3)	1 cup, 4-6 times	Oral
2	Hair fall	Fruit juice mixed with coconut oil (1:2)	1h before bath	External
	Scurvy	Mature fresh fruits only	Single, 3-5 times	Oral
3	Blood Pressure	Bark juice and normal water (1:5)	1 cup, night	Oral
	Palpitation	Bark soaked in water for overnight (Variable)	1 cup, morning	Oral
4	Dysentery	Decoction of leaf only	1 cup, 2-3 times	Oral
5	Dysentery	Mature dry fruits powder only	½ spoon, 3 times	Oral
6	Abortion	Bark juice or paste only	½ cup, need based	Oral
7	Ringworm	Fruits paste is used only	2h before bath	External
8	Vomiting, Intermittent fever	Roots soaked in water for overnight (Convenient)	1 cup, night	Oral
	Skin rash	Roots paste is used only	2-3h before bath	External
9	Stop bleeding	Leaf juice is used only	Immediately	External
	Skin rash	Leaf paste is used only	3h before bath	External
	External injury infection*	Leaf & flower paste (2:1)	Need based	External
10	Asthma	Leaf Juice with or without water (2:1)	1 cup, 3 times	Oral
11	Bleeding piles	Whole plant Juice or paste only	1 cup, 1-2 times	Oral
	Cough	Young leaf is boiled with tea or water (Variable)	2 cup, 3-6 times	Oral
12	Cough	Leaf is boiled with tea or water (Variable)	2 cup, 3 -6 times	Oral
13	Burn treatment	Leaf paste is used only	Need based	External
14	Hair fall, Antidandruff	Leaf paste is used on hair and head skin	1h before bath	External
	Stomachache	Leaf paste mixed with hot water (1:4)	2 cup, immediate	Oral
	Skin rash	Leaf paste is used only	2h before bath	External
15	Diabetes	Fruit juice with or without water (2:1)	1 cup, 2 times	Oral
	Allergy	Fruit juice with water (1:1)	2 cup, night	Oral
16	Blood pressure, Allergy	Seed oil is taken with or without honey (1:4)	3-4 drops, 2 times	Oral
	Skin rash	Seed oil or seed paste is used only	3-5h before bath	External
17	Louse killing	Only leaf paste is used on hair & full head skin	1 h before bath	External
18	Teeth & jaws tonic*	Whole leaf is taken by chewing for long time	1 leaf, 2-4 times	Oral
	Snake bite	Leaf paste is used only	½ cup, Immediate	External
19	Ulcer	Gum soaked in water for long time (1:6)	1 cup, 3 times	Oral
	Stomachache	Gum juice is taken with or without water (1:2)	1 cup, immediate	Oral
20	Vomiting	Seed juice is taken by chewing (Variable)	Need based	Oral
21	Chicken pox	Leaf or Bark paste is used only	1-2 h before bath	External
	Intermittent fever*	Leaf juice is taken with water (2:1)	1 cup, night	Oral
22	Stop bleeding	Petiole juice is applied on the spot	Few drops, instant	External
	Blood purifier	Whole plant eaten as a vegetable only	1 cup, 2-3 times	Oral
23	Stop bleeding	Paste of whole plant is used only	Need based, instant	External
	Gastric	Juice of whole plant mixed with water, (3:1)	1 cup, before meal	Oral
	External injury infection*	Whole plant paste used only	Need based	External
24	Hair fall	Flower paste is applied on hair and head only	2 h before bath	External
	Skin black spot*	Flower paste is used only	3 h before bath	External
25	Stop bleeding	Leaf paste is used only	Few drops, instant	External
	Gastric	Leaf Juice is taken with water (1:2)	1 cup, 3 times	Oral
	Diabetes*	Leaf juice is taken only	1 cup, 2 times	Oral
26	Stomachache	Leaves with rice and water is taken (Variable)	Need based, instan	Oral
	Toothache	Inflorescence paste is used to brush teeth	Need based	External
	Bad breathe	Inflorescences juice, salt and hot water (4:1:12)	3 cups, 2 times	External

To measure the number of dosages, a cup and spoon were mostly useable tools. It was also clear that the modes of application were oral and external use basically (Table 2). All of the information was collected from traditional healers, kabiraj, herbalists, medicine men, and other permanent aged residents, but they did not mention any fixed scientific dosages information. To formulate the traditional medicines, water, honey, and other materials were used in several cases. The highest number (3) of practices and formulations were recorded from the species *Zingiber officinale*, *Tagetes erecta*, *Lawsonia inermis*, *Cynodon dactylon*, *Mikania micrantha* and *Spilanthes acmella*. The nine species showed single-use and 11 showed two-use.

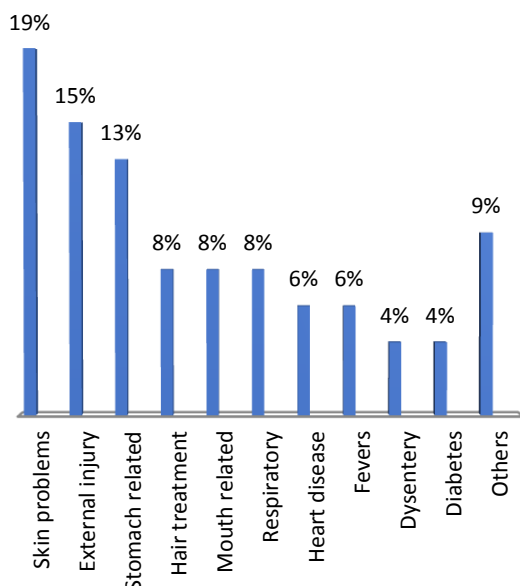


Figure 4. The percentage of different ailments a treating by the listed medicinal plants in the studied area.

Although there was no fixed scientific dosages information for the reported treatments, this survey attempted to make a list of common dosages, mostly followed by the local people of the district. Sometimes, the dosages were applied according to the intensity of the disease and age of the patient. Even, the experiment observed practices of mixed doses of several plant species, but due to a lack of confirmation data they were discarded to list. As modes of application, 31 oral and 21 external uses were recorded. Among the 52 traditional practices, the highest, 19% were skin-related problems followed by external injury and stomach-related problems (Figure 4). Significantly, seven new traditional practices of these medicinal

plants were recorded. These were flu, external injury infection, teeth and jaws tonic, intermittent fever, skin black spot, and diabetes.

For investigating new modern drugs, knowledge of traditional healthcare systems has been considered an important source in many countries (25, 26). As a result, the precious knowledge should be preserved and published to make it available for everyone to explore the source of modern medicines. Therefore, the survey results also will be helpful to enrich the database on traditional practices of medicinal plants of Bangladesh.

CONCLUSION

This survey paper reported 52 traditional practices with 7 new reports under 26 medicinal plants from the Faridpur district of Bangladesh. It also includes information on formulations, dosages, and modes of application. Finally, these survey results will be helpful in enriching the country's medicinal plants database.

CONFLICT OF INTEREST

The author declares that the article has no competing interests with any individual person, organization or institute.

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