Ethnomedicinal survey of various communities residing in Garo Hills of Durgapur, Bangladesh

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Abstract
Background: Garo Hills represents one of earliest human habitation in Bangladesh preserving its ancient cultures due to the geographic location. It is situated in the most northern part of Durgapur sub-district having border with Meghalaya of India. Durgapur is rich in ethnic diversity with Garo and Hajong as the major ethnic groups along with Bangalee settlers from the mainstream population. Thus the ethnomedicinal practice in Garo Hills is considered rich as it encompasses three different groups. Present survey was undertaken to compile the medicinal plant usage among the various communities of the Garo Hills.

Methods: The ethnomedicinal data was collected through open and focussed group discussions, and personal interviews using semi-structured questionnaire. A total of 185 people were interviewed, including the three community people and their traditional health practitioners (THPs). The usage of the plants were further analysed and are presented as use value (UV), informant consensus factor (ICF) and fidelity level (FL).

Results: A total of 71 plants from 46 families and 64 genera were documented during our survey. Gastrointestinal disorders represented the major ailment category with the use of 36 plant species followed by dermatological problems (25 species). The ICF ranged from 0.90 to 0.99, with an average value of 0.96. Leaves (41) were the principle source of medication followed by fruits (27). Trees (33) were the major plant type used in the ethnobotanical practice. A total of 25 plants showed high FL (70.91 to 100 %) with 12 plants showing maximum FL (100 %). A number of the plants appear to have unique ethnomedicinal uses.

Conclusion: Present investigation revealed a rich traditional practice in the studied region, which provides primary health care to the local community. This compilation of the ethnobotanical knowledge can help researchers to identify the uses of various medicinal plants that have a long history of use.

Keywords: Garo hills, Tribal people, Use value, Informant consensus factor, Fidelity level

Background

The Garo Hills in Durgapur sub-district is one of the most remote areas of the northern part of Bangladesh. Ethnic groups like the Garos and Hajongs reside in this area from ancient times along with Bangalee settlers who have also settled in this region hundreds of years ago. The Garos are one of the eminent ethnic groups of the Indian sub-continent. Around half a million Garo population can be found at various parts of the world, but most of them live in the north-eastern part of India [1]. At present, one-fifth of the total Garo population live in different regions of Bangladesh with their habitat spread in north-central districts namely Mymensingh, Netrakona, Gazipur, Sherpur and Tangail. Garos are mainly known for their matrilineal culture and individual kinship system [2]. Garos prefer to call themselves Achik (Hilly Garos) and Mandis (Plain Land Garos), although people not familiar with their culture simply call them as Garo [3]. Hajongs are also a small indigenous community of the Garo Hills. They came from Tibet to Assam and then to Bangladesh [4]. The Bangalee settlers, who although belonging to the mainstream population of Bangladesh, have settled alongside the ethnic communities and have through cross-cultural
exchanges with the ethnic communities for centuries, have to some extent adopted the cultures of the ethnic communities.

Tribal people and people who live in remote areas depend considerably on medicinal plants for their primary treatment. Due to this factor, medicinal plant usage in such communities is far richer than say, the urban population. The exploration of the therapeutic activity of medicinal plants rendered by them has a long history of use passed on from generation to generation [5]. However, in recent years, there has been a continuous decline in their traditional medicinal practice due to several reasons including scarcity of medicinal plants due to mass deforestation, easier access to modern medicines, and reduced interest of younger generation towards herbal medicine. The objective of the present study was to document the medicinal plant knowledge prevailing in the Garo, Hajong and Bangalee communities residing in Garo Hills and compare the presently obtained information with previously reported ethnomedicinal uses of the plants in Bangladesh towards obtaining fresh insights into newer ethnomedicinal uses of the plants. In our present study, the ethnopharmacological knowledge was collected from knowledgeable people belonging to the Garo, Hajong and Bangalee communities and the traditional health practitioners of the three communities. The results were further analyzed for comparative evaluation of the usage of individual plant species to provide an overview of medicinal plant usage in communities living in Garo Hills.

**Materials and methods**

**Study area**

The Garo tribal people can be found in districts north of Dhaak district in Bangladesh. These districts are Tangail, Mymensingh, Gazipur and Netrakona. They speak six dialects of the Mandi language, which are A'tong, Abeng, Brak, Chibok, Dual, and Megam. The Garos can also be found in the adjacent bordering areas of India like Meghalaya. Most of the Garos are poor and their main occupation is agriculture or agricultural labourers. In recent years, they are converting in mass numbers to economic terms, like the Garos, most hajongs are poor and their literacy rate is very low.

The Bangalees belong to the mainstream population of Bangladesh. They have settled in the present region of survey along side the Garos and Hajongs from as early as 50 to 100 or more years. Their interaction with the Garos and Hajongs has largely been peaceful. Like the Garos and the Hajongs, the Bangalee community is also engaged in farming, and are mostly poor and illiterate.

The survey was carried out at Garo hills, Durgapur sub-district which is under the district of Netrakona in Dhaka division, Bangladesh (Fig. 1). The area of Durgapur is 293.43 sq km. The study area is located in the most northern part of Durgapur, having the coordinates of 25.1250 °N and 90.6875 °E. Durgapur is surrounded by Meghalaya state of India on the north, Purbadhala and Netrakona Sadar on the south, Kalmakanda on the east, and Dhobaura sub-district on the west. The main rivers of this sub-district are Old Someshwari, Kangsa and Someshwari. The Garo valleys and hills are situated in the northern part of this sub-district. The Garo villages in Durgapur where the survey was conducted were Noluapara, Gupalpur, Bhojanipur, Badambari, Farongpara, Dahapara, and Fulbari. The Hajong villages were Gupalpur, Bhojanipur, Badambari, Shamnogor, and Baromari. The villages where the Bangalee communities resided and which were included in the survey were Atrakhali, Noluapara, Baromari, Fanda, and Cholk Lengura. It may be noted that the village of Noluapara contained both Garo and Bangalee communities, while the village of Badambari contained both Garo and Hajong communities, and the village of Baromari contained both Hajong and Bangalee communities. Thus to some extent, the three communities co-resided in the same village, and all the villages fell within Durgapur sub-district and thus were close to or adjacent to each other. As a result, there was a large amount of cross-cultural relationships between the three communities.

Government establishments are the only health facilities provided for inhabitants of Durgapur which include one health complex, one health center and seven family planning centers. However, such establishments lack adequate facilities and trained medical professionals. Geologically all part of the study area is almost identical. Topographically, the study area is characterized by its large hillocks, known as tilla. The soil pH fluctuates from 6 to 6.5. This area is located in the semi-drier part of Bangladesh. The highest temperature reaches to 30 °C during May and coldest to around 10 °C during January. The most common ethnic group of this area is Garo and Hajong with Bangalee community settlers interspersed within the two communities. So far, a total of 2924 Garo households and 505 Hajong households have been recorded.
in this sub-district; the number of Bangalee households have been recorded as 4778 [6].

**Ethnobotanical survey**

The survey was conducted during the period from 10\textsuperscript{th} October, 2013 to 7\textsuperscript{th} May, 2014. Before starting the survey, general information was collected about the study area as well as THPs and general people. The data was collected following the standard guidelines of ethnobotanical data collection [7, 8]. A total of 185 people participated in interviews including THPs and knowledgeable people from all three communities. All were permanent residents of the study area. The highest number of respondents of our study belonged to the Garo and Hajong ethnic communities. Respondents were selected on the basis of whether they gave an affirmative answer when asked about their medicinal plant knowledge. Following an affirmative answer, detailed interviews were conducted with the respondents where they discussed their knowledge on medicinal plants and showed the plants. Multiple interviews (occasionally as many as 4–5) were conducted with the informants to gather as much detailed knowledge of the medicinal plants as possible.

**Data collection**

While some people were co-operative to our initiative, some were less interested to continue with the conversation. In most cases, the preliminary hesitation was recovered through a brief explanation of the objective of our study in the native language of the informants. As the conversation continued, we tried to build the confidence of the interviewee so the person interacted spontaneously. Senior citizens, forest office and local administrations were consulted to identify personnel with sufficient knowledge in local ethnobotanical practices. During the study period, the ethnomedicinal data was collected through the open-ended, semi-structured interviews according to Martin and Cotton [9, 10]. The information of each plant was documented along with the local name, nature of the plant, plant part used, medicinal uses, mode of preparation, routes of administration, and degree of scarcity in this area. Recorded demographic data include the gender, age, ethnicity,
experiences, and educational background. All information in relevance to data collection was carefully noted down. The informants were also requested for a walk to introduce us with the plants. Necessary plant parts were collected for the purpose of identification. Pictures of the plant/plant part were also taken to assist in the identification. Plant specimens were verified as to taxonomy at the Bangladesh National Herbarium. Voucher specimens were deposited with the Medicinal Plant Collection Wing of the University of Development Alternative (MPCW-UODA) and accession numbers obtained from there. For ethical issues connected to field work permission was obtained from various bodies like the Ethical Committee and the Institutional Review Board of the University of Development Alternative, and local Government bodies dealing with indigenous/tribal people. A clear understanding was made with the people surveyed that their intellectual property rights as to the information supplied will not be violated if the results lead to any economic benefits for us.

Quantitative analysis

The medicinal uses of various plant species were listed in alphabetical order of the scientific names of the plants along with their family name, local name, nature of the plant, ethnomedicinal applications, mode of preparation, and route of administration. The results were presented and analysed further on the basis of their use and ailment categories. The diversity of the uses of medicinal plants were evaluated by calculating use value (UV), informant consensus factor (ICF), and fidelity level (FL).

Use values are computed for each plant to provide a quantitative measure of its comparative significance to the informants [11]. UV was calculated by the equation:

$$UV_s = \sum_iUV_{is}/n_s$$

where, ‘$UV_s$’ indicates the use value of a particular species, ‘$UV_{is}$’ is the number of use reports mentioned by the informants for that particular plant species and ‘$n_s$’ is the total number of informants participated in our study. The main objective of UV calculation is to find out the degree of ethnomedicinal use for a particular plant species. High UV value indicates the broad acceptance of that particular plant species for a particular therapeutc use.

Informant consensus factor (ICF) was calculated to measure the homogeneity of the information for a specific plant to cure a specific ailment [12, 13]. The lowest and highest values of ICF can be 0.00 and 1.00, respectively. ICF was calculated using the equation:

$$ICF = (N_{uv}−N_1)/(N_{uv}−1)$$

Where, ‘$N_{uv}$’ refers to the total number of use reports for a particular ailment category, and ‘$N_1$’ is the total number of species used for this ailment category. Several diseases were sorted out into a broad ailment category depending on similarity for the ease of the distribution of the plants.

Fidelity level (FL) expresses the priority of a species over the others in the management of a particular ailment and was calculated using the following formula:

$$FL = I_p/I_u \times 100$$

Where, ‘$I_p$’ is the number of informants stating the use of a species for a particular ailment category while ‘$I_u$’ is the number of informants stating the use of that plant for any sort of ailment category. Higher FL value indicates more frequent of use of a given plant species for treating a particular ailment category by the informants.

| Table 1 Demographic data of the informants |
|--------------------------------------------|
| Variable Category | Categories | No. of informants | % Of informants |
| Gender           | Male       | 115               | 62.16 %        |
|                  | Female     | 70                | 37.85 %        |
| Age              | 20-30 year | 20                | 10.81 %        |
|                  | 30-40 year | 25                | 13.51 %        |
|                  | 40-50 year | 47                | 25.41 %        |
|                  | 50-60 year | 78                | 42.16 %        |
|                  | More than 60 years old | 15 | 8.11 % |
| Informant category | Non-THPs (Garo and Hajong) | 95 | 51.35 % |
|                  | THPs       | 30                | 16.22 %        |
|                  | Non-THPs (Bangalee) | 60 | 32.43 % |
| Type of the non-THP ethnic communities | Garo | 70 | 73.68 % |
|                  | Hajong     | 25                | 26.32 %        |
| Experience of the THPs | Less than 2 year | 2 | 6.67 % |
|                  | 2-5 year   | 3                 | 10 %           |
|                  | 6-9 year   | 4                 | 13.33 %        |
|                  | 10-20 year | 15                | 50 %           |
|                  | More than 20 year | 6 | 20 % |
| Educational background | Illiterate | 77 | 41.62 % |
|                  | Completed 5 years’ education | 35 | 18.92 % |
|                  | Completed 8 years’ education | 23 | 12.43 % |
|                  | Completed 10 years’ education | 20 | 10.81 % |
|                  | Completed 12 years’ education | 18 | 9.73 % |
|                  | Graduate (16 years’ education) | 10 | 5.41 % |
|                  | Post-graduate (18 years’ education) | 2 | 1.08 % |
Results and discussion

Demographic characteristics of participants in the study

The Garo tribe is one of the leading indigenous communities of Bangladesh which claims to be distributed among approximately 45 clans. The last population estimation of Garos was in 1991, when it was numbered at 68,210. While known to all as Garos, they refer to themselves as Aachik or Mandi. Anthropologists accept as true that they are a Tibetan-Burmese sub-group of the Mongoloid race which possesses language, shared history and culture. The Garos are divided into four sects, namely, Chatchi, Marakh, Momin, and Sangma. Their society is matriarchal with daughters inheriting their mother’s belongings. Garo’s novel religion used to be Shangsharik, but recently about 99 % of the Garos have converted to Christianity and belong to a variety of denominations like Baptists, Presbyterians, Protestants, Roman Catholics and Seventh Day Adventists.

Scholars do not have a clear opinion on the Hajong’s history, even the Hajong themselves. Some say the Hajong originated in the Hill Tracts of Chittagong, Bangladesh and afterward migrated to the northern areas of Bangladesh and into India. Another important opinion is that the Hajong tribe came from Tibet as descendents of the Kachhari people and settled in the Kamrup area of Assam state for several years. The northern Dhaka division, which constitutes the land of the Hajong in Bangladesh, consists of districts like Netrakona, Mymensingh, Sherpur and Jamalpur. Today, the Hajong of the Durgapur area continue to live primarily in Hajong villages together with Bengalis (Bangalee or Bengali/Bangla-speaking mainstream population) and other tribal communities, such as Garo and Koch, whose village homes are simple but clean. Women perform the family cooking in a separate attached hut adjacent to the living house, cooking rice as their staple food. Hajongs are mainly a farming community and some work as hired day laborers in the fields, whereas others farm their own land. Some Hajong of Durgapur areas are also involved in collecting and selling wood from the Garo hills along the border. In terms of religion, Hajongs are close to Hindus. Hajongs worship Durga as well as other Hindu gods and goddesses. But Shiva is their principal deity. Hajongs wear ‘paita’ (a thread) on their bodies similar to Hindu Brahmans. Hajongs are believers in reincarnation too, like the Hindus.

The Bangalee community belongs to the mainstream population of Bangladesh, who speak Bengali or Bangla. While some families claim to have settled in the general areas of the Garos and Hajongs for more than a hundred years, others claim to have settled in the area in comparatively recent times like about 50 years ago. But in general, the Bangalee community lives in close association with the Garos and the Hajongs and the cultural practices of the three communities have intertwined in some aspects, the major difference being that most Bangalee settlers belong to the Muslim religion.

The survey was conducted among all three communities. The participants consisted of 62.16 % male and 37.83 % female. Out of 185 informants, 30 were THPs, 60 Bangalee people and the remaining 95 were tribal people from the Garo and Hajong communities (that is a total of 155 persons were non-traditional health practitioners but claimed to have good knowledge on medicinal plants). Prior Informed Consent was first obtained from all informants. According to the age, most of the informants (42.62 %) were illiterate (42.62 %), with only two persons holding postgraduate degrees. Among the participants, it was observed that as a general rule, THPs do not disclose the plant name or the formula of their preparation to other

| Table 2 Distribution of medicinal plant species of Durgapur Garo Hills according to their family |
|-----------------------------------------------|-----------------------------------------------|
| Family                        | No. of species | Family                        | No. of species |
| Fabaceae                      | 6              | Dilleniaceae                   | 1              |
| Rutaceae                      | 4              | Ebenaceae                      | 1              |
| Anacardiaceae                 | 3              | Euphorbiaceae                  | 1              |
| Asteraceae                    | 3              | Leguminosae                    | 1              |
| Combretaceae                  | 3              | Lythraceae                     | 1              |
| Myrtaceae                     | 3              | Malvaceae                      | 1              |
| Zingiberaceae                 | 3              | Meliaceae                      | 1              |
| Acanthaceae                   | 2              | Moringaceae                    | 1              |
| Amaranthaceae                 | 2              | Musaceae                       | 1              |
| Areceae                       | 2              | Oleaceae                       | 1              |
| Convolvulaceae                | 2              | Oxalidaceae                    | 1              |
| Lamiaceae                     | 2              | Pedaliaceae                    | 1              |
| Lauraceae                     | 2              | Piperaceae                     | 1              |
| Moraceae                      | 2              | Poaceae                        | 1              |
| Apliaceae                     | 1              | Rhamnaceae                     | 1              |
| Asparagaceae                  | 1              | Rubiaceae                      | 1              |
| Araceae                       | 1              | Scrophulariaceae               | 1              |
| Bombacaceae                   | 1              | Solanaceae                     | 1              |
| Brassicaceae                  | 1              | Sterculiaceae                  | 1              |
| Bromeliaceae                  | 1              | Thymelaeaceae                  | 1              |
| Caricaceae                    | 1              | Verbenaceae                    | 1              |
| Crassulaceae                  | 1              | Vitaceae                       | 1              |
| Cucurbitaceae                 | 1              | Xanthorrhoeaceae               | 1              |
| Serial No. | Scientific name and accession number | Family       | Local name          | Plant type | Parts used            | Ailments                                                                 | No. of ailment categories | Use value |
|-----------|-------------------------------------|--------------|---------------------|------------|-----------------------|---------------------------------------------------------------------------|--------------------------|-----------|
| 01        | Abroma augusta (L.) L.f. MPCW-UODA 1219/2014 | Sterculiaceae | Ulot-kombol         | W,T        | Leaf, bark, root      | Juice of the leaf and root for treatment of diabetes. Decoction of bark for female sexual disorders. Sap juice to treat menstrual disorders [O]. | 2                        | 1.55      |
| 02        | Acacia catechu (L. f) Willd. MPCW-UODA 1220/2014 | Fabaceae     | Khoyer              | W,T        | Bark, wood            | Decoction of bark for diarrhea [O]. Wood extract for skin diseases [T]. | 2                        | 0.33      |
| 03        | Achyranthes aspera L. MPCW-UODA 1221/2014 | Amaranthaceae | Ubush nangara       | W,H        | Root                  | Root is tied to head to treat headache [T]. Root paste for hemorrhage, eczema, diabetes and constipation [O]. | 4                        | 1.12      |
| 04        | Adhatoda vasica Nees, Syn: Justicia adhatoda L. MPCW-UODA 1223/2014 | Acanthaceae  | Bashok/Adabash      | W,H        | Whole plant, leaf     | Decoction of whole plant for intestinal disorders. Leaf juice to treat pneumonia and cough [O]. Decoction of leaf for scabies and other skin diseases [T]. | 3                        | 1.65      |
| 05        | Aegle marmelos (L.) Corrêa ex Roxb. MPCW-UODA 1225/2014 | Rutaceae     | Bel                 | W,T        | Leaf, fruit           | Ripe and unripe fruits are eaten for constipation. Decoction of leaves for peptic ulcer. Leaf oil to treat respiratory disorders [O]. | 2                        | 1.88      |
| 06        | Aloe barbadensis Mill. MPCW-UODA 1226/2014 | Xanthorrhoeaceae | Ghrita-kumari       | W,H        | Leaf, Latex           | Leaf for skin dandruff and burns [T]. Leaf juice for stomach disorders [O]. Leaf-latex for constipation [O]. | 2                        | 1.32      |
| 07        | Amaranthus spinosus L. MPCW-UODA 1230/2014 | Amaranthaceae | katakhuduira        | W,H        | Leaf, Stem            | Hot extraction for the treatment of rheumatic pain, pain in the bones, blood or pus coming out with urine [O]. | 2                        | 0.56      |
| 08        | Ananas sativus Schultz. MPCW-UODA 1231/2014 | Bromeliaceae | Anarosh             | C,H        | Leaf, Fruit           | Fruit juice is taken for fever. Young leaf is chewed for helminthiasis and jaundice [O]. | 3                        | 1.96      |
| 09        | Andrographis paniculata Nees MPCW-UODA 1232/2014 | Acanthaceae  | Kalomegh            | W,H        | Whole plant           | Juice of whole plant for the treatment of fever, boil, ulcer and to enhance appeal for food [O]. | 3                        | 1.16      |
| 10        | Anthocephalus chinensis Hassk. MPCW-UODA 1233/2014 | Rubiaceae    | Kodorn              | W,T        | Leaf, Bark            | Leaf and bark decoction for ulcers, wounds, pain, constipation, and edema [O]. | 4                        | 0.66      |
| 11        | Aquilaria malaccensis Lamk., Syn: Aquilaria agallocha Roxb. MPCW-UODA 1234/2014 | Thymelaeaceae | Agar                | W,T        | Wood                  | Wood extract used for body pain, and skin diseases [T]. Wood decoction for ulcer, edema, and jaundice [O]. | 5                        | 0.41      |
| 12        | Asparagus racemosus Willd. MPCW-UODA 1235/2014 | Asparagaceae | Shotomuli           | W,H        | Leaf, Root            | Decoction of leaf for epilepsy and stomach ulcers. Root extract with milk for physical weakness in male [O]. | 3                        | 1.27      |
| 13        | Averrhoa carambola L. MPCW-UODA 1236/2014 | Oxalidaceae  | Kamranga            | W,T        | Leaf, Fruit           | Ripe fruits are eaten for cough, fever, appetite stimulant and jaundice [O]. Leaf juice for ringworm and chickenpox [T]. | 6                        | 1.18      |
| 14        | Azadirachta indica A. Juss. MPCW-UODA 1238/2014 | Meliaceae    | Neem                | W,T        | Leaf                  | Leaves are dried and powdered and taken every morning for allergy, eczema, skin diseases and diabetes [O]. | 2                        | 1.52      |
| 15        | Bombax ceiba L. MPCW-UODA 1240/2014 | Bombacaceae  | Shimul              | W,T        | Root, seed            | Root juice of young plants for sexual disorders. Decoction of root to arouse sexual desire. Seed oil for gonorrhoea [O]. | 2                        | 1.72      |
| 16        | Brassica oleracea L. MPCW-UODA 1242/2014 | Brassicaceae | Patakopi            | C,H        | Leaf                  | Cooked or salad to treat tonic, gynecological disorders [O]. | 2                        | 0.67      |
| 17        | Calendula officinalis L. MPCW-UODA 1243/2014 | Asteraceae   | Gada ful            | G,H        | Leaf, Flower          | Mashed leaf and flower to treat old wound, menstrual problems and itches [T]. Flowers to treat stomach upset, ulcers and inflammation [O]. | 4                        | 0.88      |
| No. | Scientific Name | Family | Local Name | Part Used | Uses |
|-----|----------------|--------|------------|-----------|------|
| 18  | Carica papaya L. | Caricaceae | Pepe/Pabda | Leaf, Latex, Fruit | Ripe and unripe fruits are eaten to treat dysentery, diabetes, constipation and chronic indigestion. Latex for the treatment of peptic ulcer. Leaf paste for ringworm [O]. |
| 19  | Cassia alata L. Syn: Senna alata (L.) Roxb. | Fabaceae | Daudraj | Leaf | Leaf paste is applied to treat skin disease, and scabies [T]. |
| 20  | Cassia fistula L. | Fabaceae | Sonalu | Leaf, Fruit, Root | Ripe fruits to treat helminthiasis. Juice of leaf and root for long-term cough, nervous weakness [O]. |
| 21  | Cassia occidentalis L. | Fabaceae | Jhi jhi gach | Root | Root paste is massaged on the leg with mustard oil for leg pain [T]. |
| 22  | Centella asiatica (L.) Urb. | Apiaceae | Thankuni | Leaf | Leaf juice for dysentery [O]. Leaf paste applied on wounds, burns, and skin lesion [T]. |
| 23  | Cinnamomum tamala (Buch.-Ham.) T.Nees & C.H.Eberm | Lauraceae | Tejpata | Leaf | Leaf paste to treat headache and pimples [T]. |
| 24  | Cinnamomum verum J. Presl. | Lauraceae | Daruchini | Bark | Bark for asthma and coughs [O]. |
| 25  | Cissus quadrangularis L. | Vitaceae | Harjora | Leaf, Stern, rhizome | Stem and rhizome paste for pain and bone fracture [T]. Dried leaf and stem for stomach upset, stomach ulcer, and malaria fever [O]. |
| 26  | Citrus acida Pers. | Rutaceae | Lebu | Fruit | Fruit juice for facial scars and spots [T]. Fruits increase appetite [O]. |
| 27  | Citrus grandis Hassk. | Rutaceae | Jambura | Fruit | Fruit juice for the treatment of fever [O], scabies, eczema, and itching [T]. |
| 28  | Clerodendrum viscosum Vent. | Verbenaceae | Bhati | Leaf, Fruit | Juice from crushed leaf and fruit for helminthiasis and dysentery [O]. |
| 29  | Coccinia cordifolia (L.) Cogn. | Cucurbitaceae | Telakucha | Whole plant, Leaf | Juice is produced from whole plant to treat diabetes, gonorrhea and constipation [O]. Leaf for wounds [T]. |
| 30  | Coccos nucifera L. | Areceaceae | Narkel | Fruit | The inner portion of unripe fruit is used to treat skin disease and to remove skin spots [T]. Coconut water for diarrhea [O]. |
| 31  | Colocasia esculenta (L.) Schott | Araceae | Kochu | Stem | Stem paste to stop bleeding from cuts and wounds [T]. |
| 32  | Curcuma longa L. | Zingiberaceae | Holud | Rhizome | Rhizome juice for diarrhea and flatulence [O]. Rhizome paste to remove face spots [T]. |
| 33  | Cuscuta reflexa Roxb. | Convolvulaceae | Shorno lota | Whole plant | Juice obtained from macerated whole plant for the treatment of jaundice [O]. |
| 34  | Cynodon dactylon (L.) Pers. | Poaceae | Durba gash | Whole plant, Rhizome | Macerated whole plant is applied to stop bleeding from cuts and wounds [T]. Rhizome for heart failure. Whole plant extract for diabetes [O]. |
| 35  | Datura metel L. | Solanaceae | Dhutura | Leaf, Flower, Seed | Flower and seed for cold and nervous disorders [O]. Crushed leaf is applied to painful areas [T]. |
Table 3. List of medicinal plants of the Durgapur Garo Hills reported by THPs and local knowledgeable people of three communities (Continued)

| No. | Species | Family | Tribe | Part(s) Used | Condition(s) | TWA | TG |
|-----|---------|--------|-------|--------------|--------------|-----|-----|
| 36  | Delonix regia (Bojer) Raf. | Fabaceae | Krishnochura | Leaf, Fruit | Fruit and leaf paste for piles and boils [O]. | 2  | 0.38 |
| 37  | Dillenia indica L. | Dilleniaceae | Chalta | Fruit | Fruit juice is taken for fever and cough [O]. | 2  | 0.88 |
| 38  | Diospyros peregrina Gürke | Ebenaceae | Gab | Bark, Fruit | Bark decoction to treat dysentery and cholera [O]. | 1  | 0.55 |
| 39  | Elettaria cardamomum (L.) Maton | Zingiberaceae | Elach | Fruit, seed | Fruit and seed for asthma and coughs [O]. | 1  | 0.92 |
| 40  | Emblica officinalis Gaertn. | Euphorbiaceae | Amloki | Fruit | Fruits for allergy, as food, and for gastric [O]. | 2  | 1.62 |
| 41  | Enydra fluctuans Lour. | Asteraceae | Helencha | Whole plant, | Fried whole plant for intestinal disorders [O]. | 1  | 0.44 |
| 42  | Ferania limonia Swingle Syn: Limonia acidissima Houtt. | Rutaceae | Kadbael | Fruit | Ripe fruits are eaten for flatulence, and pimple [O]. | 2  | 0.55 |
| 43  | Ficus racemosa L. | Moraceae | Jog dumur | Leaf, Fruit | Leaf paste to arouse sexual desire and biliary disorders. Fruits are taken for treatment of diabetes [O]. | 3  | 0.44 |
| 44  | Hibiscus rosa-sinensis L. | Malvaceae | Jaba | Whole plant, | Whole plant for dysentery. Leaf juice is taken to treat debility [O]. | 2  | 0.67 |
| 45  | Hyptis suaveolens (L.) Poit. | Lamiaceae | Tokma | Fruit | Fruits for the treatment of flatulence, acidity, gastric troubles [O]. | 1  | 1.24 |
| 46  | Ipomoea aquatic Forssk. | Convolvulaceae | Kalmi shak | Leaf | Fried leaf for constipation and piles [O]. | 2  | 0.29 |
| 47  | Kalanchoe pinnata (Lam.) Pers. | Crassulaceae | Patharkuchi | Leaf, Root | Leaf juice to treat cholera, diarrhea, and dysentery [O]. | 1  | 0.37 |
| 48  | Lannea coromandelica (Hoult.) Merr. | Anacardiaceae | Jiga | Leaf | Leaf paste for urinary problems, diabetes [O]. | 2  | 0.24 |
| 49  | Mangifera indica L. | Anacardiaceae | Aam | Bark, flower, fruit | Ripe and unripe fruits used to treat dysentery [O]. Decoction of bark and flower to prevent graying of hair [T]. | 2  | 0.80 |
| 50  | Mikania cordata (Burm.f.) B.L. Rob. | Asteraceae | Refugee lota/jarnani lota | Leaf | Macerated leaf to stop bleeding from external cuts and wounds [T]. | 1  | 0.93 |
| 51  | Mimosa pudica L. | Leguminosae | Lajjaboti | Root | Decoction of roots for jaundice treatment [O]. | 1  | 0.66 |
| 52  | Morinda oleifera Lam. | Rubiaceae | Sojina | Leaf, Fruit | Leaf juice for fat control. Fruits for diabetes [O]. | 2  | 1.06 |
| 53  | Musa paradisaica L. | Musaceae | Bichi kola | Leaf, Fruit | Leaf juice for anemia. Unripe fruits to treat dysentery [O]. | 2  | 0.78 |
| 54  | Nyctanthes arbor-tristis L. | Oleaceae | Sheuly | Leaf, Flower, Seed | Seed and flower paste for constipation. Leaf juice to treat fever [O]. | 2  | 0.41 |
| 55  | Ocimum tenuiflorum L. | Lamiaceae | Tulsi | Leaf, Stem | Juice from macerated leaves to treat coughs [O]. Stems are worn as garland around the neck for tuberculosis [T]. | 2  | 1.71 |
| No. | Scientific Name                      | Family          | Common Name | Part Used | Uses                                                                 | ICF | Notes |
|-----|-------------------------------------|-----------------|-------------|-----------|----------------------------------------------------------------------|-----|-------|
| 56  | Phoenix sylvestris (L.) Roxb.       | Arecales        | Khejur      | Root, Fruit | Juice from crushed leaves, indigestion, diarrhea, dysentery and menstrual disorders [O]. | 3   | 0.41  |
| 57  | Piper betel Blanco                   | Piperaceae      | Paan        | Leaf      | Juice from leaf for diabetes and acidity [O].                        | 2   | 1.48  |
| 58  | Psidium guajava L.                  | Myrtaceae       | Peyara      | Leaf      | Ripe fruit and leaf juice to treat diabetes, intestinal worms [O].    | 2   | 0.91  |
| 59  | Punica granatum L.                  | Lythraceae      | Dalim       | Fruit     | Ripe fruit and leaf juice to treat diabetes, intestinal worms [O].    | 2   | 0.91  |
| 60  | Scoparia dulcis L.                  | Scrophulariaceae | Dhonia      | Leaf      | Leaf is taken on an empty stomach for fever [O].                     | 1   | 0.48  |
| 61  | Sesamum indicum L.                  | Pedaliaceae     | Tiil        | Leaf, Seed | Leaf paste is used in fistula. Seed oil for the treatment of burns associated with infection, pain and blisters [T]. | 3   | 0.69  |
| 62  | Spondias pinnata (L.f.) Kurz        | Anacardiaceae   | Amra        | Bark, Fruit| Unripe fruits are eaten for dyspepsia [O]. Bark juice to treat dysentery [O]. | 1   | 0.64  |
| 63  | Syzygium aromaticum (L.) Merr. & L.M. Perry | Myrtaceae | Sheora     | Leaf, Root | Leaf paste for gastrointestinal disorders. Mashed root for increasing energy [O]. | 2   | 0.42  |
| 64  | Syzygium cumini (L.) Skeels         | Myrtaceae       | Jaam        | Leaf, Fruit| Decoction of leaf to induce vomiting. Ripe fruits to treat diabetes [O]. Bark juice is taken for excessive bleeding during menstruation and chronic dysentery [O]. | 3   | 1.45  |
| 65  | Terminalia arjuna (Roxb. ex DC.) Wight & Arn | Combretaceae | Arjun       | Leaf      | Decoction of leaf for the treatment of sinusitis and chronic cold [O]. | 2   | 0.95  |
| 66  | Terminalia bellirica (Gaertn.) Roxb. | Combretaceae | Bohera      | Fruits    | Fruits are eaten for helminthiasis [O] and loss of hair [T].         | 2   | 1.71  |
| 67  | Zingiber officinale Roscoe          | Zingiberaceae   | Ada         | Rhizome   | Rhizome is eaten for coughs, stomach pain and gastric [O].            | 3   | 1.75  |
| 68  | Ziziphus mauritiana Lam.            | Rhamnaceae      | Boroi       | Leaf, Fruit| Leaf juice for dysentery and diarrhea. Ripe fruits are eaten for constipation [O]. | 1   | 1.28  |

T: Tree, H: Herb, S: Shrub, V: Vine, C: Cultivated, G: Grown in the garden, W: Wild; [O]: Oral, [T]: Topical

To calculate ICFs, all the recorded 82 ailments were grouped into 16 major ailment categories (Table 4) [35, 36]. The medicinal plants were distributed according to these major categories. ICFs were calculated for the pre-recorded plants and ranged from 0.90 to 0.99 (Table 5). High ICF value refers to an increased evidence of the efficacy of a plant species to treat a given ailment [37]. The ailment category of ‘sexual stimulant’ has the highest ICF scoring (0.99). Bombax ceiba (UV 1.72) is mainly used as sexual stimulant. Although the ICF for gastrointestinal disorders (0.96) was less compared to ailment categories of sexual stimulant, heart diseases, or hematological disorders, the highest number of plant usage (36 species) was documented under this category. Use of too many plant species for a wide range of ailments can render a low ICF and may require further analysis of the results to identify the most useful plant for a given ailment. On the other hand, a high ICF signifies that the users have greater reliability with the use of the plants for the respective major ailment category. There is a higher possibility of for plants with higher ICF to contain relevant bioactive phytochemicals [35].
people (however, they provided this information to us after proper explanation as described before). They transfer their knowledge verbally either to one or more of their family members or to their assistant (known as the ‘Sishya’ of the THPs). On the other hand, non-THPs always reveal their knowledge to their family member or anyone from their community who is interested in such knowledge.

Medicinal plants recorded

Through this survey, a total of 71 plant species belonging to 46 families were recorded, that have various medicinal uses in the study area. The highest number of medicinal plants belong to Fabaceae (6 species), followed by Rutaceae (4 species), Anacardiaceae (3 species), Asteraceae (3 species), Combretaceae (3 species), Myrtaceae (3 species) and Zingiberaceae (3 species). The results are shown in Table 2.

Botanical families including Fabaceae, Rutaceae, Anacardiaceae, Asteraceae, Combretaceae, and Zingiberaceae have previously been shown to be the major medicinal plant families of Durgapur Garo Hills [6]. Similar results were found in surveys carried out in the Eastern Himalayan region of India [14]. The family Fabaceae reportedly has the highest number of species, more than any other plant family in the world [15, 16].

In the current study, high UVs were observed for Ananas sativus (1.96), Aegle marmelos (1.88), Terminalia arjuna (1.85), Zingiber officinale (1.75), Bombax ceiba (1.72) Terminalia bellirica (1.71), Ocimum tenuiflorum (1.71), Carica papaya (1.65), and Adhatoda vasica (1.65) indicating their wide usage in the ethnomedicinal practices in the study area. Multipurpose use of above plants might have contributed towards their high UVs [1].

The lowest UVs were obtained for Cassia fistula (0.21), Lannea coromandelica (0.24), Cinnamomum verum (0.28), Ipomoea aquatica (0.29), and Acacia catechu (0.33) (Tables 3, 4 and 5). However, a low UV does not nullify the merit of the medicinal value of a plant species as the low UV might be linked to low availability of the plant in the study area.

The fidelity level (FL) of the plants, which were cited 25 times or more for any particular disease are listed in Table 6 with the lowest and highest FLs being 70.91 % and 100 %, respectively. The highest FL of 100 % was recorded for 12 plant species of which, three species namely, Aegle marmelos, Carica papaya, Terminalia chebula were used for gastrointestinal disorders. Thus, among 36 plant species used in gastrointestinal disorders, three were found to be used extensively. Among 25 plants used for dermatological problems, only Azadirachta indica scored 100 % FL.

Plants having high FL values in other ailment categories are Ananas sativus, Averrhoa carambola, Bombax ceiba, Citrus grandis, Ocimum tenuiflorum, Syzygium cumini, Terminalia arjuna, and Zingiber officinale. These plants are widely used in many ethnobotanical practices around the world with sufficient scientific validations of their ethnomedicinal use [16–18].

Table 4 Ailments grouped by major ailment categories

| Category                      | Common diseases/Medical terms                                                                 | No. of species used |
|-------------------------------|---------------------------------------------------------------------------------------------|--------------------|
| Gastrointestinal disorders    | Constipation, peptic ulcer, stomach disorders, ulcer, appeal for food, stomach ulcer, dysentery, increase appetite, diarrhea, flatulence, intestinal disorders, cholera, acidity, dyspepsia, gastrointestinal disorders, vomiting, chronic dysentery, burning sensations, gastric troubles, chronic indigestion | 36                 |
| Fever                         | Fever, malaria fever                                                                         | 09                 |
| Respiratory complaints        | Pneumonia, cough, respiratory disorders, long-term cough, asthma, tuberculosis, chronic cold | 13                 |
| Diabetes                      | Diabetes, fat control                                                                       | 11                 |
| Liver disorders               | Jaundice, biliary disorders                                                                  | 07                 |
| Dermatological problems       | Dandruff, burns, boil, wounds, skin diseases, allergy, eczema, itch, scabies, skin lesion, pimples, bone fracture, facial scars, spots, bleeding from cuts and wounds, chicken pox | 25                 |
| Urinary and rectal diseases   | Blood or pus coming out with urine, gonorrhea, urinary problems, fistula, piles, edema      | 09                 |
| Inflammation and pain         | Headache, rheumatic pain, bone pain, body pain, leg pain, sinusitis, stomach pain           | 12                 |
| Hematological disorders       | Anaemia, hemorrhage                                                                          | 02                 |
| Sexual stimulant              | Arouse sexual desire, sexual disorders                                                       | 02                 |
| Hair growth                   | Prevent graying of hair, loss of hair                                                        | 02                 |
| General health                | Tonic, increasing energy, physical weakness in male, debility                                | 04                 |
| Nervous system                | Epilepsy, nervous weakness                                                                   | 04                 |
| Helminthiasis                 | Helminthiasis, ringworm, intestinal worms                                                     | 07                 |
| Female sexual disorders       | Menstrual disorders, gynecological disorders, excessive bleeding during menstruation       | 05                 |
| Heart problems                | Heart diseases                                                                               | 02                 |
Information regarding the preparation
Various plant parts including leaves, root, stem, fruits, bark, flowers, seeds, whole plant, and rhizomes were widely used for the treatment of diverse types of ailments. Leaves were found to be the most used plant part in the ethnomoedicinal practice of Garo Hills, which was followed by fruits (23 %), and root (9 %) (Fig. 2). Similar to our present finding, leaves were found to be the most used plant part in many other ethnomedicinal practices [19–23]. Metabolically the most active part of the plant, leaves are known to synthesize a wide range of secondary metabolites [24, 25]. Leaves are also the first choice in ethnomedicine due to the easy collection and preparation procedure [26, 27].

There are several modes of preparation of ethnomedicines, including juice, decoction, powder, paste, oil, etc. The major mode of ethnobotanical preparations in Garo Hills was found to be juice (35 %), followed by fresh fruits (25 %), decoction (16 %), and paste (16 %) (Fig. 3). The local people of Garo Hills often add salt, sugar, banana, milk or lemon (e.g., see *Asparagus racemosus*) to enhance the effectiveness or palatability of a preparation. Paste is prepared using mortar and pestle, and then often mixing it with mustard oil, coconut oil or ginger (e.g., *Cassia occidentalis*). For THPs, it is more common to use more than one plant in the formulation of a preparation, to be used for the treatment of a particular ailment. A comparison of the mode of administration of the preparations is presented in Fig. 4, which has a similar trend as that of some other ethnobotanical reports [28].

Habit, habitat, and nature of the plants
Among the recorded 71 medicinal plant species of Garo Hills, 35 % are trees followed by 30 % herbs, and 10 % shrubs (Fig. 5). While some plants are grown in home gardens, most of them can be found growing naturally in places including pond side, roadside, riverside or in the hills. Trees and herbs enjoy a higher usage in ethnomedicinal practice because of their greater availability [29, 30]. Of the recorded 71 plant species; THPs reported the highest number of plants species used by them as trees during our current study.

Comparative ethnomedicinal uses of the plants in Bangladesh
A review of the comparative ethnomedicinal uses of the 71 medicinal plants by the Garo, Hajong and Bangalee communities in the present study versus previously reported ethnomedicinal uses of those plants in Bangladesh is shown in Table 7. Of the 71 plant species obtained in the present survey, 39 plant species appears to be quite extensively used by folk and tribal medicinal practitioners in other parts of Bangladesh as judged from the various ethnomedicinal uses of those plant species reported in the published literature. These plant species are *Abroma augusta,*
Achyranthes aspera, Adhatoda vasica, Aegle marmelos, Alocasia barbadensis, Amaranthus spinosus, Andrographis paniculata, Asparagus racemosus, Azadirachta indica, Bombax ceiba, Carica papaya, Cassia alata, Centella asiatica, Cissus quadrangularis, Clerodendrum viscosum, Coccinia cordifolia, Colocasia esculenta, Curcuma longa, Cuscuta reflexa, Cynodon dactylon, Datura metel, Emblica officinalis, Hibiscus rosa-sinensis, Kalanchee pinnata, Mangifera indica, Mikania cordata, Mimosa pudica, Moringa oleifera, Nyctanthes arbour-tristis, Ocimum tenuiflorum, Psidium guajava, Scoparia dulcis, Streblus asper, Syzygium cumini, Tamarindus indica, Terminalia arjuna, Terminalia bellirica, Terminalia chebula, and Zingiber officinale. All of these plants have multiple uses, and the uses observed in the present survey match at least one of the reported uses.

The question naturally arises as to whether there are any unique uses of the various plant species used by the Garo, Hajong and Bangalee traditional medicinal practitioners. In fact, there are a number of uses which are unique to these three communities and which previously have not been reported. A. catechu, which was observed in the present study to be used for diarrhea and skin diseases, has been previously reported to be used for blood dysentery [31]. The various uses of A. chinensis described in the present study have not been reported before. A. malaccensis was used by the practitioners for body pain, skin diseases, ulcer, edema and jaundice.

| Sl. no. | Medicinal plant | Ailment category | Lp<sup>a</sup> | Lu<sup>b</sup> | FL<sup>c</sup> (%) |
|--------|----------------|-----------------|--------------|--------------|-----------------|
| 01     | Abrama augusta  | Female sexual disorders | 55           | 57           | 95.74           |
| 02     | Adhatoda vasica | Respiratory complaints | 48           | 53           | 90.57           |
| 03     | Aegle marmelos  | Gastrointestinal disorders | 110          | 110          | 100.00          |
| 04     | Aloe barbadensis | Gastrointestinal disorders | 62           | 72           | 86.11           |
| 05     | Ananas sativus  | Helminthiasis | 120          | 120          | 100.00          |
| 06     | Andrographis paniculata | Gastrointestinal disorders | 51           | 62           | 82.26           |
| 07     | Asparagus racemosus | General health | 46           | 61           | 75.40           |
| 08     | Averrhoa carambola | Helminthiasis | 86           | 86           | 100.00          |
| 09     | Azadirachta indica | Dermatological problems | 90           | 90           | 100.00          |
| 10     | Bombax ceiba | Sexual stimulant | 77           | 77           | 100.00          |
| 11     | Calendula officinalis | Urinary and rectal diseases | 37           | 48           | 77.08           |
| 12     | Carica papaya | Gastrointestinal disorders | 102          | 102          | 100.00          |
| 13     | Cassia fistula | Nervous system | 45           | 49           | 91.84           |
| 14     | Centella asiatica | Gastrointestinal disorders | 62           | 75           | 82.66           |
| 15     | Citrus grandis | Fever | 106          | 106          | 100.00          |
| 16     | Coccinia cordifolia | Diabetes | 55           | 61           | 90.16           |
| 17     | Cuscuta reflexa | Liver disorders | 51           | 67           | 76.11           |
| 18     | Cynodon dactylon | Dermatological problems | 48           | 59           | 81.36           |
| 19     | Emblica officinalis | Gastrointestinal disorders | 72           | 85           | 84.71           |
| 20     | Hyptis suaveolens | Gastrointestinal disorders | 48           | 59           | 81.36           |
| 21     | Musa paradisiaca | Hematological disorders | 34           | 47           | 72.34           |
| 22     | Ocimum tenuiflorum | Respiratory complaints | 105          | 105          | 100.00          |
| 23     | Piper betel | Diabetes | 39           | 55           | 70.91           |
| 24     | Piper betel | Diabetes | 92           | 92           | 100.00          |
| 25     | Terminalia arjuna | Heart diseases | 97           | 97           | 100.00          |
| 26     | Terminalia bellirica | Hair growth | 55           | 65           | 84.62           |
| 27     | Terminalia chebula | Gastrointestinal disorders | 77           | 77           | 100.00          |
| 28     | Zingiber officinale | Inflammation and pain | 95           | 95           | 100.00          |
| 29     | Ziziphus mauritiana | Gastrointestinal disorders | 38           | 44           | 86.36           |

<sup>a</sup>The number of use reports cited for a given species for a particular ailment category  
<sup>b</sup>The number of informants cited the species for any ailment category  
<sup>c</sup>Fidelity level
only previously reported use of this plant was for treatment of headache [32]. The use of *A. racemosus* for treatment of epilepsy and stomach ulcers has not been reported before. *B. oleracea*, used to treat gynaecological disorders and as a tonic has no previously reported ethnomedicinal uses in Bangladesh. *C. officinalis* was used by the practitioners to treat old wound, itches, menstrual problems, stomach upset, ulcer and inflammation. The previously reported use of this plant was against ear ache, skin infections, and insect bite [33]. The use of *C. occidentalis* to treat leg pain is new.

Other hitherto unreported uses of the various plant species include use of *C. asiatica* for skin lesions; use of *C. tamala* for headache; use of *C. verum* for coughs; use of *C. quadrangularis* for stomach upset, stomach ulcer and malaria fever; use of *C. grandis* for scabies, eczema and itches; use of *C. cordifolia* for wounds; use of *C. dactylon* for diabetes; use of *D. regia* for piles and boils (the previously reported use of this plant was to increase sexual energy [34]); use of *D. indica* for fever and coughs; use of *D. peregrina* for dysentery and cholera; use of *E. cardamomum* for asthma; use of *F. limonia* for pimples; use of *I. aquatica* for piles; use of *L. coromandelica* for urinary problems and diabetes; use of *N. arbor-tristis* for constipation; use of *P. sylvestris* for nervousness, coughs and fever; use of *P. guajava* for menstrual disorders; use of *S. dulcis* for fever; use of *S. indicum* for fistula, burns associated with infection, pain and blisters; use of *S. aromaticum* for asthma; use of *S. cumini* for excessive bleeding during menstruation; and use of *T. indica*
for sinusitis and chronic cold. Thus this study adds to the reported ethnomedicinal uses of the plant species mentioned, which in turn can lead scientists to perform further relevant research on the pharmacological properties of the various plant species, isolation of bioactive constituents and validating the traditional uses.

**Relevance of the findings for public health and/or environmental issues**

Bangladesh is a developing country with the vast majority of people (including tribal/indigenous communities) living in rural areas with inadequate access to modern doctors and clinics. Moreover, such doctors, clinics and allopathic medicine are not affordable to these people. As such, any scientific studies carried out with medicinal plants used traditionally and involving pharmacological activity studies, isolation and identification of bioactive components, followed by clinical trials can go a long way in mitigating the sufferings of these poor illiterate communities, for these plants are still to some extent available and easily affordable. From that view point, ethnomedicinal studies like this can spur scientific interest leading to scientific validation of traditional uses of medicinal plants.

The other relevant point is such studies and findings can spur conservation efforts in preserving both plants and knowledge of their uses, for both are fast disappearing because of rapid deforestation caused from increases in population, and rural people forgetting their traditional knowledge because of the introduction of ‘city culture and habits’. Such introduction is causing the rural people to somewhat disdain their traditional way of living and culture, considering these as ‘primitive’ and not fit for the modern age. Plants have always formed a good source for many efficacious allopathic medicines and thorough documentation of traditional ways of
### Table 7 Other reported ethnomedicinal uses of the plants in Bangladesh

| Plant name | Other reported ethnomedicinal uses in Bangladesh |
|------------|-------------------------------------------------|
| *Achyranthes aspera* (L.) L.f. | Diabetes, sexual disorder by the Garo tribe living in Netrakona district [19]; weakness and headache by folk medicinal practitioners (FMPs) of two villages in Rajshahi district [38]; used again by FMPs of Vasu Bihar village, Bogra district [39]; used against spermatorrhea by a village FMP in Faridpur district [40]; spermatorrhea by FMPs of Sylhet Division, Bangladesh [41]; dyspepsia, dysentery, physical sickness, urinary incontinence, burning sensations in the urinary tract in Shitol Para village, Jhalokati district [42]; leucorrhea, scabies by FMPs of three villages in Natore and Rajshahi districts [43]; sex stimulant by FMPs of Daudkandi sub-district of Comilla district [44]; leucorrhea, menstrual problems by FMPs of Dinajpur district [45]; gonorrhea, leucorrhea, constipation, menstrual troubles by the Garo tribe inhabiting the Madhupur forest region of Bangladesh [46]; irregular menstruation, painful menstruation, burning sensations in the uterus by FMPs of Noakhali district [47]; debility by FMPs in villages by the Ghaghot River of Rangpur district [48]; debility by FMPs in villages by the Padma River of Rajshahi district [49]; diabetes by FMPs of Vasu Bihar village, Bogra district [49]; astringent by FMPs of Balidha village, Jessore district [50]; to induce regular menstruation, abscess, sexual diseases in men, low sperm count by FMPs of Station Purbo Para village, Jamalpur district [51]; menstrual problems, meho (endocrinological disorders, diabetes) by FMPs of Shetabganj village, Dinajpur district [52]; passing of semen with urine by FMPs of Daulatdia Ghat, Kushtia district [51]; debility, Infertility in women due to problems in uterus (badhok disease) by FMPs of Vitbilia village in Pabna district [52]; to increase libido by FMPs of six villages in Greater Naogaon district [53]; gonorrhea, sexual weakness by FMPs of seven villages in Ishwardi Upazilla, Pabna district [54]; burning sensations during urination, dysentery, pain by FMPs of a village in Narayanganj district [55]; sexual disorders by a FMP of Gachabari village in Tangail district [56]; irregular menstruation by tribal medicinal practitioners (TMPs) of the Chakma tribe residing in Rangamati district [57]; meho (endocrinological disorders), promeho (sexually transmitted diseases like gonorrhea) by FMPs of three villages in Kurigram district [58]; burning sensations during urination, sexual problems by TMPs of Goala tribe of Moulvibazar district [59]; to keep body cool by a FMP of Savar in Dhaka district [60]; sexual weakness, general weakness by FMPs of four villages in Natore and Rajshahi districts [61]; ‘meho’ (endocrinological disorder but generally indicative of diabetes) by TMPs of the Tudu sub-clan of the Santal tribe in Joypurhat district [62]; sexual weakness, irregular menstruation, pain and burning sensations during menstruation by TMPs of 15 clans of the Garo tribe of Madhupur, Tangail district [63]; rise of blood pressure during night by FMPs of Bhola district [64]; irregular menstruation, leucorrhea, anemia by a FMP of Jhalokathi in Barisal district [65]; decrease in sexual strength by FMPs of two villages in Natore district [31]; headache, hardening of skins in the body by FMPs of Chuadanga district [66]; premature ejaculation, antidote to poisoning, intestinal dysfunction by the tribal healers of Oraon tribe of Sylhet district [67]; weakness by the TMPs of the Rai Clan of the Tipra tribe of Sylhet Division [68]; spermatorrhea by a FMP of a village in Faridpur district [40]; vaginitis by TMPs of two Marma tribal communities in two villages of Khagrichhari district [69]; low sperm count by TMPs and FMPs practicing within a Khasia tribal community in Jalofong area, Sylhet district [70]; diabetes, urinary disorder by a Fahan TMP in Dinajpur district [71]; diabetes by FMPs and TMPs in the vicinity of Lavachara Forest Reserve, Moulvibazar district [72]; physical weakness by TMPs of Kole and Rai tribes of Rajshahi and Nawabganj districts [73]. |

*Acacia catechu* (L.) Wild. | Blood dysentery in humans and cattle by FMPs of three areas in Pirojpur district [74]. |

*Acyanthes aspera* L. | Snake bite, diabetes, gonorrhea by the Garo tribe living in Netrakona district [19]; menstrual disorders and burning sensations during urination in two villages of Rajshahi district [38]; frequent ejaculation by itself in Faridpur district [40]; leucorrhea, dysentery, jaundice in Shitol Para village, Jhalokati district [42]; blood dysentery, toothache, wound, sciatica, abortifacient, eczema by FMPs of three villages in Natore and Rajshahi districts [43]; abortifacient by the Garo tribe inhabiting the Madhupur forest region of Bangladesh [46]; coughs, pneumonia, snake bite, eczema, stomach pain, gonorrhea, low semen count, leucorrhea by FMPs of Noakhali district [47]; hematuria by FMPs in villages by the Ghaghot River of Rangpur district [48]; to stop bed-wetting in children, tooth diseases, enlargement or shrinking of scrotum by FMPs in villages by the Padma River of Rajshahi district [48]; low sperm count, to increase sexual power, debility, jaundice by FMPs of Station Purbo Para village, Jamalpur district [33]; jaundice, to increase libido by FMPs of six villages in Greater Naogaon district [53]; eczema by FMPs of seven villages in Ishwardi Upazilla, Pabna district [54]; leucorrhea by a FMP of Gachabari village in Tangail district [56]; burning sensations during urination, kidney stone by FMPs of three villages in Kurigram district [58]; tooth infections, irregular menstruation by FMPs of Goala tribe of Moulvibazar district [59]; dermatitis, chronic dysentery, blood dysentery, menorrhagia by FMPs of four villages in Natore and Rajshahi districts [61]; leucorrhea by TMPs of 15 clans. |
Adhatoda vasica Nees

Cough, pneumonia, asthma by the Garo tribe living in Netrokona district [19]; respiratory problems by FMPs of Sylhet Division, Bangladesh [41]; coughs, asthma, pulmonary edema, fever; skin infections by FMPs of two villages in Natore district [31]; infertility in woman, bleeding while pregnant (blood can be present in urine or just comes out of the vagina) by FMPs of Chaudanga district [60]; low density of semen by FMP of Jhenidah district [60]; frequent ejaculation by itself by a FMP of a village in Faridpur district [40]; vomiting tendency, diarrhea, excessive blood during menstruation by TMPs and FMPs practicing within a Khasia tribal community in Jaffargong area, Sylhet district [70]; injury by a Pahan TMP in Dinajpur district [71]; dental abscesses, diabetes by TMPs of Kole and Rai tribes of Rajshahi and Nawabganj districts [73]; jaundice, respiratory problems by the Marma tribe living in Naikrongchhari, Bandaran district [75]; poisonous animal bites, inflammation of the body, fever, cough and mucus due to cold, asthmatic, tonsillitis by the Rakhain tribe inhabiting the Chittagong Hill Tracts region [76]; severe stomach pain, excessive bleeding following menstruation by the Santal tribe residing in Rajshahi district [77]; edema by the Tripura tribe residing in Chittagong Hill Tracts, Bangladesh [78]; to increase libido by FMPs of Badaragang and Sheerkhetek villages in Ranpur district [79]; bitter, to increase appetite, vomiting tendency, cough, obesity, respiratory tract disorders, piles, pain, gastrointestinal disorders, jaundice by FMPs of three villages in Seeipur Upazilla, Magura district [80]; nocturnal emissions, constipation, burning sensations during urination by FMPs of Terbania and Bahla villages in Tangail district [81]; stomach pain, flatulence by TMs of Bongshi tribe in Tangail district [82]; severe pain, whitish discharge from vagina, hair loss, jaundice, tooth infections, uterine problems by FMPs of several areas of Faridpur and Rajshahi districts [83]; diabetes by TMs of Naik clan of Rajonghiri tribe of Moulvibazar district [84]; to increase sexual strength by TMs of Raj Khatiya tribe of Pabna district [85]; urinary problems like passing of blood in urine by TMs of the Pankho tribe of Bilachari Union, Rangamati district [86]; abscess by TMs of the Mummu tribal community residing in Rajshahi district [87]; bitter, to increase appetite, piles, respiratory tract disorders, pain, gastrointestinal disorders, to increase sperm, vomiting tendency, cough, obesity, jaundice by FMPs of two villages in Bagerhat district [88]; uterine inversion by TMs of the Khatiya and Rashia clans of the Bagdi tribe in Rajbari district [89]; jaundice by TMs of the Tripura tribe residing in Comilla district [90]; having trouble during urination, passing of blood during urination by a Tonchongya tribal healer of Rangamati district [91]; jaundice by a FMP practicing among tea garden workers in Seremangal, Moulvibazar district [92]; asthma by a Garo TMP practicing among Garo and Kushe tribes in Sherpur district [93]; babies, stomach pain, cough, pneumonia by folk herbalists in Comilla district [94]; jaundice by TMs of the Harbang clan of the Tripura tribe of Mankshai area, Chittagong district [95]; male infertility, impotency by TMs of the Nog clan of the Rai Ghatua tribe in Moulvibazar district [96].

Table 7 Other reported ethnomedicinal uses of the plants in Bangladesh (Continued)
| Aegle marmelos (L) Cormèa ex Roxb. | Other reported ethnomedicinal uses of the plants in Bangladesh (Continued) |
|-----------------------------------|---------------------------------------------------------------------|
| **Rangamati district** (88): flatulence, low sperm count, sperm incapable of being fertilized, astringent, bitter, to increase flow of bile, bilious problems like bile turning the color of blood, diarrhea, dysentery, tepezra by FMPs of two villages in Bagerhat district (88); coughs, tuberculosis, toothache by TMPs of the Tipra tribe residing in Comilla district (90); fever, coughs by a Kush tribal practitioner practicing among Garo and Kush tribes in Sherpur district; dry coughs by a Chakma tribal practitioner practicing among Garo and Kush tribes in Sherpur district; asthma by a Garo tribal practitioner practicing among Garo and Kush tribes in Sherpur district (93); coughs, mucus by folk herbalists in Comilla district (94); cough, mucus, asthma by FMPs of the Harbang clan of the Tripura tribe of Minharia area, Chittagong district (95); fever, loss of appetite by TMPs of the Nag clan of the Rai Ghatual tribe in Moulibazar district (96); mucus by FMPs of Dharmrai sub-district, Dhaka district (97); coughs by FMPs of Barisal Town, Barisal district (98); malaria, coughs, colds by TMPs of Tonchongya tribe of Roangchhari Upazila in Bandaran district (99); coughs, mucus by the Telii clan of the Telegu tribe of Moulibazar district (100); coughs by TMPs of Chakma tribe of Rangapani Churia Area in Khagrachhari district (34); diabetes, coughs by TMPs of the Manipuri tribe in Kamaliganj Upazila, Moulibazar district (101); fever, coughs by TMPs of the Bauri tribal community of Moulibazar district (102); skin infections, tuberculosis by a TMP of the Deb barma clan of the Tripura tribe of Moulibazar district (103). |
| **Constipation, dysentery, indigestion, pain by the Garo tribe living in Netrakona district** (19); constipation, dysentery, small size of penis in two villages of Rajshahi district (38); dysentery in Vasu Bihar village, Bogra district (39); urinary bladder stone by FMPs of Sylhet Division, Bangladesh (41); pain under the umbilicus or stomach pain due to helminthic infestations, constipation, helminthiasis, decreased sperm count, aphrodisiac in Shitoli Para village, Jhalokati district (42); indigestion, cooling, appetizer, loss of libido, weakness, paralysis by FMPs of three villages in Natore and Rajshahi districts (43); dysentery, peptic ulcer by FMPs Daxaudkandi sub-district of Comilla district (44); indigestion, loss of appetite, constipation, weakness, dysentery, snake bite, skin infections by FMPs of Noakhali district (47); flatulence by FMPs in villages by the Ghaghun River of Rangpur district (48); liver disorder, sunstroke, jaundice, constipation, sexual disorder, piles in humans, apnea in cow or sheep by FMPs in villages by the Bangali River of Bogra district (48); dysentery by FMPs of Vasu Bihar village, Bogra district (49); chronic dysentery, diabetes by FMPs of Station Purbo Para village, Jamalpur district (33); to remove foul odor of sweat in adults, vomiting in children by FMPs of Shetabganj village, Dinajpur district (52); to remove odor from sweat, insobriety or insanity, acidity, ear and eye diseases by FMPs of Daulatdia Ghat, Kushtia district (53); digestive aid by FMPs of six villages in Greater Naogaon district (53); blood dysentery, constipation, to increase memory, to prevent stomach upsets by FMPs of a village in Narayanganj district (55); gastrointestinal disorders like flatulence, constipation, stomach pain by tribal medicinal practitioners (TMPs) of the Chakma tribe residing in Rangamati district (57); dysentery, to remove odor of sweat, vomiting in children by FMPs of three villages in Kurigram district (58); acne by a FMP of Savar in Dhaka district (58); chronic dysentery, dandrudd by FMPs of four villages in Natore and Rajshahi districts (61); dysentery, to keep stomach cool by FMPs of Bhola district (64); blood dysentery by a FMP of Jhalokathi in Barisal district (65); reduced sexual desire in humans by FMPs of Chuaandaga district (66); snake bite, stomach disorders by FMP from Jhenaidah district (66); chronic dysentery, burning sensations in the body, heart palpitations by the TMPs of the Rai Clan of the Tipra tribe of Sylhet Division (68); indigestion, loss of appetite by FMPs and TMPs in the vicinity of Lawachara Forest Reserve, Moulibazar district (72); dysentery by TMPs of two Marma tribal communities in two villages of Khagrachhari district (69); to keep head cool, sprain, fracture by TMPs of Kole and Rai tribes of Rajshahi and Nawabganj districts (73); chronic dysentery, constipation, indigestion by FMPs of three areas in Piropur district (74); sedative by the Marma tribe living in Naikhongchhari, Bandarban district (75); indigestion, piles, constipation, respiratory problem, inflammation, poisonous insect or snake bites, heart palpitations, fever, cold, fever of bowel by the Rakhain tribe inhabiting the Chittagong Hill Tracts region (76); to keep body cool, diarrhoea, dysentery, constipation, astringent, repeat fevers, contagious fevers, frequent urination (diabetes) by the Tripura tribe residing in Chittagong Hill Tracts, Bangladesh (78); acidity, skin allergy, excessive sexual desire, carminative, coughs, astringent by FMPs of three villages in Sreepur Upazila, Maquara district (80); severe pain, whitish discharge from vagina, hair loss, gastric problems by FMPs of several areas of Faridpur and Rajbari districts (83); constipation by TMPs of Naik clan of Rajbongshi tribe of Moulibazar district (84); sexual disorder in males, to increase attraction in a female for a male by TMPs of Rai Khatriya tribe of Pabna district (85); rheumatism, insect repellent, flatulence by TMPs of the Soren clan of the Santal tribe in Rajshahi district (104); jaundice, indigestion by TMPs of the Murmu tribal community residing in Rajshahi district (87); to increase digestive... |
Other reported ethnomedicinal uses of the plants in Bangladesh (Continued)

**Aloe barbadensis Mill.**

- Headache, hot feeling in head, and stomach disorders in two villages of Rajshahi district (38); liver disorders and bloating in Faridpur district (40); constipation, rheumatism, digestive aid by FMPs of Sylhet Division, Bangladesh (41); burns due to fire, energizer, low semen density, to increase eyesight, spermatorrhoea, constipation, to improve texture of skin in Shitol Para village, Jhalokati district (42); ecbloric, irregular menstruation, wound, appetizer, blood dysentery by FMPs of three villages in Natore and Rajshahi districts (43); purgative, piles by FMPs of Daudkandi sub-district of Comilla district (44); leucorrhoea by FMPs of Dinajpur district (45); chronic constipation, diabetes, asthma, burning sensation during sexual ejaculation, to stimulate hair growth, carminative, respiratory problems by FMPs of Noakhali district (47); debility by FMPs in villages by the Ghaghot River of Rangpur district (48); to disinfect water by FMPs of Station Purbo Para village, Jamalpur district (33); tuberculosis by FMPs of Shetabganj village, Dinajpur district (32); to increase strength, increase semen, enlarged spleen, bloating, hepatic diseases, pain, boils by FMPs of Daulatdia Ghat, Kushtia district (51); sexually transmitted diseases in men, skin disorders by FMPs of Vitbilla village in Pabna district (52); severe headache by FMPs of seven villages in Ishwardi Upazilla, Pabna district (54); constipation, burns, skin disorders, diabetes by FMPs of a village in Narayanganj district (55); to increase libido, to improve texture of skin, blisters due to burns, tuberculosis by FMPs of three villages in Kurigram district (58); constipation, hypertension, anxiety by FMPs of four villages in Natore and Rajshahi districts (61); skin disorders, burning sensations in skin, hair loss, physical weakness, sexually transmitted diseases, leucorrhoea by TMPs of 15 clans of the Garo tribe of Madhupur, Tangail district (63); piles, stool clarification, physical weakness by the TMPs of the Rai Clan of the Tipra tribe of Sylhet Division (68); liver disorders, bloating by a FMP of a village in Faridpur district (40); low sperm count by TMPs of two Marma tribal communities in two villages of Khagrachhari district (69); tendon pain by FMPs and TMPs in the vicinity of Lawachara Forest Reserve, Moulibazar district (72); weakness, tuberculosis, meho (endocrinological disorders, diabetes) by FMPs of three areas in Pirojpur district (74); dysentery, blood dysentery by a Chakma TMP practicing among Garo and Kush tribes in Sherpur district; physical weakness by a Garo TMP practicing among Garo and Kush tribes in Sherpur district (93); to keep head cool, dysentery by FMPs of Dhamrai sub-district, Dhaka district (97); to keep body cool, burning sensations during urination by Christians living in Mitzapur village of Dinajpur district, Bangladesh (108); laxative, appetizer, alopecia, asthma, tuberculosis by FMPs of Boalia sub-district, Rajshahi district (109); constipation by FMPs of Bheramara area in Kushtia district (110).

**Amaranthus spinosus L.**

- Dysentery in two villages of Rajshahi district (38); gastrointestinal disorders in Vasu Bihar village, Bogra district (39); frequent ejaculation of sperm with blood in Faridpur district, Bangladesh (40); to increase strength and to stimulate appetite by FMPs of Sylhet Division, Bangladesh (41); leucorrhoea, cough, dysentery by FMPs of three villages in Natore and Rajshahi districts (43); to stop frequent urination by FMPs of Dinajpur district (45); boils, abscesses by the Garo tribe inhabiting the Madhupur forest region of Bangladesh (46); blood dysentery by FMPs in villages by the Ghaghot River of Rangpur district (48); gastrointestinal disorders by FMPs of Vasu Bihar village, Bogra district (49); debility, diabetes by FMPs of Station Purbo Para village, Jamalpur district (33); stoppage of urination and defecation, diabetes, burning sensations during urination by FMPs of Shetabganj village, Dinajpur district (32); diarrhoea, heat stroke, leucorrhoea by FMPs of Vitbilla village in Pabna district (52); hoarseness of voice, throat pain by FMPs of six villages in Greater Naogaon district (53); stoppage of urination and defecation, toothache, bleeding from gums by FMPs of three villages in Kurigram district (58); red color of urine by TMPs of Bongshi tribe in Tangail district (82); waist pain by TMPs of Goalla tribe of Moulibazar district (59); dysentery, sexual stimulant by FMPs of four villages in Natore and Rajshahi districts (61); low semen density by the tribal healers of Oraon tribe of Sylhet district (67); frequent ejaculation of sperm along with blood by a FMP of a village in Faridpur district (40); flatulence, dysentery by FMPs and TMPs in the vicinity of Lawachara Forest Reserve, Moulibazar district (72); irregular whitish discharge in urine of women.
Table 7 Other reported ethnomedicinal uses of the plants in Bangladesh (Continued)

| Plant                        | Ethnomedicinal Uses                                                                 |
|------------------------------|------------------------------------------------------------------------------------|
| Ananas sativus Schultf.      | Fever, helminthiasis, jaundice by the Garo tribe in Natrakona district [19]; helminthiasis, stomach pain by FMPs of Sylhet Division, Bangladesh [41]; jaundice, helminthiasis by FMPs of Noakhali district [47]; helminthiasis by FMPs of Shetabganj village, Dinajpur district [52]; wasting away of body in women by FMPs of six villages in Greater Naogaon district [53]; helminthiasis, fever, cold, coughs by FMPs of a village in Narayanganj district [55]; helminthiasis by FMPs of three villages in Kurigram district [58]; fever, hookworm infection by FMPs of 15 clans of the Garo tribe of Madhupur, Tangail district [63]; helminthiasis, to increase appetite, mucus by FMPs of Bhola district [64]; helminthiasis by the tribal healers of Gor tribe of Sylhet district [67]; pneumonia, asthma, respiratory problems by the Marma tribe living in Nalbongchhari, Bandarban district [75]; jaundice, jaundice by the Rakhain tribe inhabiting the Chittagong Hill Tracts region [76]; antihelmintic, antibacterial, urinary problem, stimulate appetite by the Tripura tribe residing in Chittagong Hill Tracts, Bangladesh [78]. |
| Andrographis paniculata Nees | Fever and helminthiasis in Faridpur district, Bangladesh [40]; liver diseases, helminthiasis in Shitol Para village, Jhalokati district [42]; emetic, antihelmintic, sexual disorders by FMPs of three villages in Natore and Rajshahi districts [43]; long-term fever, any type of severe body pain by FMPs of Dinajpur district [45]; fever, headache, vertigo by the Garo tribe inhabiting the Madhupur forest region of Bangladesh [46]; liver diseases by FMPs of Feni district [47]; fever by FMPs in villages by the Padma River of Rajshahi district [48]; liver disorders, helminthiasis, acidity by FMPs of Shibibala village in Pabna district [52]; stomach and heart disorders by FMPs of Goala tribe of Moulovibazar district [59]; jaundice, malaria, blood purifier, allergy by FMPs of 15 clans of the Garo tribe of Madhupur, Tangail district [63]; fever, pneumonia, mucus, helminthiasis by FMPs of two villages in Natore district [31]; allergy, chronic fever by FMP of Jhenishad district [66]; constipation, stomach pain by the FMPs of the Rai Clan of the Tipra tribe of Sylhet Division [68]; fever, helminthiasis, by a FMP of a village in Faridpur district [40]; diabetes, stomach pain by a Pahan TMP in Dinajpur district [71]; coughs, cold by FMPs and TMPs in the vicinity of Lawachara Forest Reserve, Moulovibazar district [72]; helminthiasis, fever by FMPs of Cole and Rai tribes of Rajshahi and Nawabganj districts [73]; fever, constipation by FMPs of Bongshi tribe in Tangail district [82]; stomach disorders, to improve digestion, bloating with burning sensations in chest by FMPs of several areas of Faridpur and Rajbari districts [83]; common cold, uncomplicated sinusitis, pharyngotonsillitis, lower urinary tract infections, acute diarrhea, bacillary dysentery, bronchitis, carbuncles, colitis, cough, dyspepsia, fever, hepatitis, malaria, mouth ulcers, sores, tuberculosis, venomous snake bite, colic, otitis media, vaginitis, pelvic inflammatory disease, chicken pox, eczema, burns by FMPs of two villages in Bagerhat district [88]; cold, coughs, fever by FMPs of the Khatiya and Kashya clans of the Bagdi tribe in Rajbari district [89]; fever arising suddenly during the night, toothache, skin infections by TMPs of the Tripura tribe residing in Comilla district [90]; fever by a Chakma tribal practitioner practicing among Garo and Kushi tribes in Sherpur district; rheumatic problems, gastric problems by a Kush tribal practitioner practicing among Garo and Kushi tribes in Sherpur district [93]; fever, loss of appetite by TMPs of the Nag clan of the Rai Ghatual tribe in Moulovibazar district [96]; jaundice, helminthiasis by TMPs of the Charkma tribe of Rangapanar Chara Area in Khagrachhari district [34]; fever, malarial fever by TMPs of the Bauri tribal community of Moulovibazar district [102]; malaria by a TMP of the Deb barma clan of the Tripura tribe of...
Table 7 Other reported ethnomedicinal uses of the plants in Bangladesh (Continued)

**Asparagus racemosus** Willd.
Snake bite, wounds by the Garo tribe living in Netrakona district [19]; diabetes, tuberculosis in Shitol Para village, Jhalokati district [42]; sexual disorders, anti-hemorrhagic, sore throat, night blindness, blood dysentery by FMPs of three villages in Natore and Rajshahi districts [43]; physical and mental weakness by FMPs of Dinajpur district [45]; bacterial or fungal infections, edema, tonic, bloating, hypertension, to increase lactation, malnutrition in children, to increase memory, nerve weakness, to increase strength by FMPs of Noakhali district [47]; burning sensation during urination, bloating by FMPs in villages by the Gaghoto River of Rangpur district [48]; debility, to keep body healthy by FMPs of Station Purbo Para village, Jamalpur district [33]; physical weakness in males by FMPs of Shetabganj village, Dinajpur district [32]; constipation, impotency in men by FMPs of Vitibilia village in Pabna district [52]; impotency in males, to increase libido by FMPs of six villages in Greater Naogaon district [53]; hypertension, to increase lactation in nursing mother by FMPs of seven villages in Ishwardi Upazilla, Pabna district [54]; gonorrhea, spermatorrhoea, erectile dysfunction, premature ejaculation, frequent urge for urination but only 1–2 drops of urine coming out each time by a FMP of Gachabari village in Tangail district [56]; weakness, diabetes, urinary problems by FMPs of four villages in Natore and Rajshahi districts [61]; sexual weakness, physical weakness by TMPs of 15 clans of the Garo tribe of Madhupur, Tangail district [63]; night blindness, blood dysentery, filariasis by a FMP of Jhalokathi in Barisal district [65]; used as preventive medicine against spermatorrhoea and cardiovascular disorders as well as to raise body resistance against diseases and to keep the body healthy and mind contented by FMP of Jhenidah district [66]; body pain, leucorrhoea by TMPs of two Marma tribal communities in two villages of Khagrachhari district [60]; to increase lactation by FMPs and TMPs in the vicinity of Lawachara Forest Reserve, Moulibazar district [72]; physical weakness by TMPs of Kole and Rai tribes of Rajshahi and Nawabganj districts [73]; tuberculosis by the Santal tribe residing in Rajshahi district [77]; asthma during winter, all food tasting bitter, nutritive, to increase intelligence, to maintain good eyes, to increase sperm, to increase lactation, to increase strength, diarrhoea by FMPs of three villages in Sreepur Upazilla, Magura district [80]; burning sensations during urination, weakness by TMPs of Bongshi tribe in Tangail district [82]; asthma, leucorrhoea by TMPs of Rai Kshatriya tribe of Pabna district [85]; swelling or enlargement of testicles by TMPs of the Pankho tribe of Bilaichari Union, Rangamati district [86]; asthma during winter, bitter taste in mouth, nutritive, to increase intelligence, to maintain good eyes, to increase sperm, to increase lactation, to increase strength, diarrhea, hyperacidity by FMPs of two villages in Bagerhat district [88]; snake bite by TMPs of the Khatriya and Kashya clans of the Bagdi tribe in Rajbari district [89]; physical weakness by a Kush tribal practitioner practicing among Garo and Kushi tribes in Sherpur district; physical weakness by a Garo tribal practitioner practicing among Garo and Kushi tribes in Sherpur district [93]; asthma, cough, cold by TMPs of Tonchongya tribe of Roangchhari Upazila in Bandarban district [99]; all diseases by a TNP of the Deb barma clan of the Tripura tribe of Moulibazar district [103]; stone lodged in penis, diabetes by FMPs of Bheramara area in Kushtia district [110].

**Aquilaria malaccensis** Lamk.
Headache by FMPs of Dinajpur district [45].

**Averrhoa carambola** L.
Diarhoea, vomiting, influenza by the Garo tribe living in Netrakona district [19]; coughs and mucus in two villages of Rajshahi district [38]; eczema, digestive aid, to keep body cool by FMPs of Sylhet Division, Bangladesh [41]; to stop bleeding, bone fractures in Shitol Para village, Jhalokati district [42]; tonic, appetizer by FMPs of three villages in Natore and Rajshahi district [48].

**Annona chinensis** Hassk.
Snake bite by FMPs of Sylhet Division, Bangladesh [41]; scar, myopathic spasm, indigestion in humans, flatulence in cattle by FMPs in villages by the Bangali River of Bogra district [48]; infertility in men or women, infections in diabetic patients, bloating in cattle by FMPs in villages by the Padma River of Rajshahi district [48]; mouth wounds by FMPs of Vasu Bihar village, Bogra district [49]; elephantiasis, any problem of scrotum by FMPs of Balidha village, Jessore district [50]; helminthiasis in children, tumor, jaundice by FMPs of Shetabganj village, Dinajpur district [32]; piles by FMPs of six villages in Greater Naogaon district [53]; fever, snake bite by FMPs of three areas in Pirojpur district [74]; helminthiasis, tumor, swelling by FMPs of Dhamrai sub-district, Dhaka district [97]; headache, burns, eczema, itch by FMPs of Barisal Town, Barisal district [98]; fever, coughs, eye diseases, labor pain by FMPs of Boalab sub-district, Rajshahi district [109]; tumor by the Santal tribe residing in Thakurgaon district [111].
Table 7 Other ethnomedical uses of the plants in Bangladesh (Continued)

| Plant Name | Uses |
|------------|------|
| *Azadirachta indica* A. Juss. | Fever, chicken pox, measles, skin disease by the Garo tribe living in Netrakona district [19]; itch, scabies, allergy, pus formation, skin disorders by Shtiol Para village, Jalokati district [42]; dental diseases, scabies by FMPs of Daudkandi sub-district of Comilla district [44]; syphilis, skin diseases, scabies, leprosy by FMPs in villages by the Ghaghot River of Rajshahi district [48]; insecticide by FMPs of Vasu Bihar village, Bogra district [49]; considered useful in any type of disease by FMPs of Balidha village, Jessore district [50]; skin diseases, body ache, bone pain, diabetes, measles, pox, itch, scabies, indigestion, cataret, decreased eye sight, abscess of teeth, fever, jaundice by a FMP of a village in Faridpur district [40]; constipation by TMPs of two Marma tribal communities in two villages of Khagrachhari district [69]; sperm incapable of being fertilized, constipation, coughs, flatulence by FMPs of two villages in Bagerhat district [88]; jaundice by a FMP practicing among tea garden workers in Sreemangal, Maulvibazar district [92]; liver diseases, fever, jaundice by a FMP of Sreemangal Upazila in Maulvibazar district [105].

Dried bark of *Azadirachta indica* A. Juss. has been used as a blood purifier and antiseptic. It is also very effective in curing scabies, indigestion, cataract, increased eye sight, abscess of teeth, fever, jaundice by a FMP practicing among tea garden workers in Sreemangal, Maulvibazar district [92]; liver diseases, fever, jaundice by a FMP of Sreemangal Upazila in Maulvibazar district [105].
Table 7 Other reported ethnomedicinal uses of the plants in Bangladesh (Continued)

| Plant Species                        | Other Reported Uses                                                                 |
|--------------------------------------|-------------------------------------------------------------------------------------|
| Dhaka district [114]; scabies, itch   | Urinary calculus, low semen density in two villages of Rajshahi district [38]; to   |
| Bomfia ceiba L.                      | increase semen by FMPs of Sylhet Division, Bangladesh [41]; acne, spermatorrhea,   |
|                                      | loss of libido by FMPs of Netrakona district [19]; stoppage of urination, debility, |
|                                      | sexual weakness, to increase semen by FMPs of Sylhet Division, Bangladesh [41];    |
|                                      | acne, spermatorrhea, leucorrhea, presence of blood in vomit or bleeding through nose |
|                                      | due to liver disorders, blood clotting problems or tuberculosis in Shitoli Para village,  |
|                                      | Jhalokati district [42]; diarthea, skin infections, edema by FMPs of three villages in  |
|                                      | Natore and Rajshahi districts [43]; to increase sexual activity by FMPs of Daudkandi  |
| Carrie indica L.                     | sub-district of Cornilla district [44]; debility, to increase growth by FMPs of      |
|                                      | Dinajpur district [45]; gonorrhea by the Garo tribe inhabiting the Madhupur forest region  |
|                                      | of Bangladesh [46]; sex stimulant by FMPs in villages by the Ghaghott River of Rangpur |
|                                      | district [48]; erectile dysfunction, snake bite by FMPs in villages by the Padma     |
|                                      | River of Rajshahi district [48]; loss of libido by FMPs of Vasu Bihar village, Bogra district [49]; aphrodisiac, passing of semen with urine by FMPs of Balidha village, Jessore district [50]; to keep body healthy, to increase sexual power by FMPs of Station Purbo Para village, Jamalpur district [33]; sex stimulant by FMPs of Sylhet Division, Bangladesh [68]; diabetes by a Pahan TMP in Dinajpur district [71]; weakness, diarrhea by FMPs of three areas in Pirojpur district [74]; to increase libido, gastric ulcer by FMPs of Badarganj and Shekhertek villages in Rangpur district [79]; passing of semen with urine by FMPs of several areas of Faridpur and Rajbari districts [83]; diarrhea, dysentery by FMPs of Teli tribe of Pabna district [85]; diarrhea, indigestion, burning sensations due to dehydration by FMPs of two villages in Bagerhat district [88]; physical weakness by a Chakma TMP practicing among Garo and Kush tribes in Sherpur district [93]; debility, infrequent urination by FMPs of Dhamrai sub-district, Dhaka district [97]; stoppage of urination and defecation by FMPs of Barisal Town, Barisal district [98]; being touched by ‘evil wind’ by TMPs of the Soren clan of the Santal tribe in Rajshahi district [104]; to increase sperm count by Christians living in Mirzapur village of Dinajpur district, Bangladesh [108]; to increase sperm count by FMPs of Bheramara area in Kurigram district [110]; gonorrhea, acne by a FMP of Jamalpur district [110]; having difficulties in urinating by FMPs of Mro community of Gazalia Union in Bandarban district [118].

Brassica oleracea L.

Calendula officinalis L.

Carica papaya L.
other reported ethnomedicinal uses of the plants in Bangladesh (Continued)

| Plant             | Use                                                                 |
|-------------------|----------------------------------------------------------------------|
| Cassia fistula L. | Ring worm by the Garo tribe living in Netrakona district [19]; ringworm by Shitol Para village, Jhalokati district [42]; eczema, wound, anesthetic, dermatitis, leucorhoea by FMPs of three villages in Natore and Rajshahi districts [43]; scabies, skin diseases by FMPs of Dinajpur district [45]; skin diseases by the Garo tribe inhabiting the Madhupur forest region of Bangladesh [46]; skin diseases by FMPs of Noakhali district [47]; ringworm by FMPs of Balidha village, Jessore district [50]; scabies by FMPs of Station Purbo Para village, Jamalpur district [33]; skin diseases by tribal medicinal practitioners (TMPs) of the Chakma tribe residing in Rangamati district [57]; eczema by TMPs of Goala tribe of Moulvibazar district [59]; sexual disorder by FMPs of four villages in Natore and Rajshahi districts [61]; eczema, scabies, skin infections by TMPs of 15 clans of the Garo tribe of Madhupur, Tangail district [63]; skin diseases by FMPs and TMs in the vicinity of Lauwachura Forest Reserve, Moulvibazar district [72]; ringworm, eczema by the Marma tribe living in Naikhongchhari, Bandarban district [75]; ringworm by the Tripura tribe residing in Chittagong Hill Tracts, Bangladesh [78]; skin disorder, eczema by TMs of the Pankho tribe of Bilachari Union, Rangamati district [86]; eczema by TMs of the Khatriya and Kashiya clans of the Bagdi tribe in Rajbari district [89]; skin infections by a Tonchongya tribal healer of Rangamati district [91]; eczema, any type of skin disorder by TMs of the Harbang clan of the Tripura tribe of Minsharai area, Chittagong district [95]; ringworm, eczema, itch, scabies, skin disease by TMs of Tonchongya tribe of Roangchaari Upazila in Bandarban district [99]; skin diseases by TMs of the Manipuri tribe in Kamalganj Upazila, Moulvibazar district [101]; eczema by a TMP of the Deb barna clan of the Tripura tribe of Moulvibazar district [103]; eczema by a FMP of Sreemangal Upazila in Moulvibazar district [105]; nocturnal emissions by FMPs of Bheramara area in Kushtia district [110]; stomach pain due to bloating or indigestion by TMs of Tonchongya tribe of Bandarban district [114]; itches, skin disorders by a FMP of Aria Bazar village, Bogra district [119]. |
| Cassia excelsa L. | Cancer, injury, dermatitis by the Garo tribe living in Netrakona district [19]; asthma by FMPs of two villages in Rajshahi district [38]; helminthiasis in Shitol Para village, Jhalokati district [42]; long-term cough, nervous weakness, constipation by FMPs of Dinajpur district [45]; cracking of skin and helminthiasis in humans, dysentery of cattle by the Garo tribe inhabiting the Madhupur forest region of Bangladesh [46]; helminthiasis by FMPs of Noakhali district [47]; anal disorders (prolapse) by FMPs of Daulatdia Ghat, Kushtia district [51]; eczema, waist pain, coughs by a FMP of Savar in Dhaka district [56]; diarrhea by FMP from Jhenaidah district [66]; tonsillitis, rheumatism, leprosy by the TMPs of the Rai Clan of the Tripura tribe of Sylhet Division [68]; stomach pain by TMs of two Marma tribal communities in two villages of Khagrachhari district [69]; tuberculosis by a Pahan TMP in Dinajpur district [71]; fevers, to stimulate appetite by the Marma tribe living in Naikhongchhari, Bandarban district [75]; coughs, obesity, laxative, fever, heart disorders, bilary problem, carminative, piles, constipation, leprosy, coughs by FMPs of three villages in Sreepur Upazila, Magura district [80]; jaundice by TMs of Rai Khatriya tribe of Pabna district [85]; constipation in children by TMs of the Pankho tribe of Bilachari Union, Rangamati district [86]; constipation in children by a Tonchongya tribal healer of Rangamati district [91]; snake repellent, eczema by folk herbalists in Comilla district [94]; bloating, urinary problems, stoppage of urination by TMs of the Harbang clan of the Tripura tribe of Minsharai area, Chittagong district [95]; purgative by FMPs of Barisal Town, Barisal district [98]; coughs, helminthiasis, diabetes, irregular urination, edema, constipation by TMs of Tonchongya tribe of Roangchaari Upazila in Bandarban district [99]; stomach pain by a FMP of Sreemangal Upazila in Moulvibazar district [105]; leprosy, tonsillitis by Christians living in Mirzapore village of Dinajpur district, Bangladesh [108]; gastrointestinal disorders in goats by the Santal tribe residing in Thakurgaon district [111]. |
| Cassia occidentalis L. | Paralysis in Faridpur district [40]; itch, appetite, antiinflammatory, asthma, whooping cough, leucodema by FMPs of three villages in Natore and Rajshahi districts [43]; eczema, gastric problems by FMPs of Dinajpur district [45]; nocturnal dyspnoea by FMPs in villages by the Ghaghot River of Rangpur district [49]; stomach ache by FMPs in villages by the Padma River of Rajshahi district [48]; gastrointestinal problems, stomach ache by FMPs of Shetabganj village, Dinajpur district [32]; boils, skin diseases, coughs, mucus, blood purifier by FMPs of Daulatdia Ghat, Kushtia district [51]; skin infections, scabies by FMPs of Chuadanga district [56]; paralysis by a FMP of a village in Faridpur district [40]; tonic, diabetes, malaria, fistula, to induce fertility in men by TMs of Santal tribe of Rangpur district [107]; rheumatism by Christians living in Mirzapore village of Dinajpur district, Bangladesh. |
Other reported ethnomedicinal uses of the plants in Bangladesh (Continued)

Table 7 Other reported ethnomedicinal uses of the plants in Bangladesh (Continued)

| Plant Name | Uses                                                                 |
|------------|----------------------------------------------------------------------|
| C. asiatica (L.) Urb. | Dysentery and intestinal pain by the Garo tribe living in Netrakona district; weakness in two villages of Rajshahi district; dysentery in Vasu Bihar village, Bogra district; dysentery and blood dysentery in Faridpur district; indigestion; appetite stimulant by FMPs of Sylhet Division, Bangladesh; dysentery, stomach ache, to increase memory in Shitol Para village, Jalalotaki district; body ache, dysentery by FMPs of Daudkandi sub-district of Comilla district; indigestion, stomach infection by the Garo tribe inhabiting the Madhupur forest region of Bangladesh; weakness, skin problems, dysentery, indigestion, cataract, gonorrhea, low semen, leucorrhoea by FMPs of Noakhali district; bone fracture by FMPs in villages by the Bghogor River of Rangpur district; sexual diseases by FMPs in villages by the Padma River of Rajshahi district; dysentery by FMPs of Vasu Bihar village, Bogra district; to keep head cool, diabetes, swelling in eyes, conjunctivitis in humans, cataract in goats by FMPs of Station Purbo Para village, Jamalpur district; hair loss, dysentery, gastrointestinal disorders, injury by FMPs at Shetabagori village, Dinajpur district; blood purifier, fever, diabetes by FMPs of Daulatdia Ghat, Kushtia district; anemia, vomiting, stomach pain by FMPs of six villages in Greater Naogaon district; cold, dysentery, blood purifier by FMPs of seven villages in Ishwardi Upazilla, Pabna district; diarrhea, dysentery by FMPs of a village in Narayanganj district; stomach pain, swelling (edema) in hands or legs by a FMP of Gachabari village in Tangail district; flatulence, indigestion, hair loss by FMPs of three villages in Kurigram district; to increase memory by a FMP of Savar in Dhaka district; stomach pain, dysentery by FMPs of the Tudu sub-clan of the Santal tribe in Joypurhat district; bloating, diarrhea, dysentery, to increase memory by FMPs of Bhola district; dysentery by FMPs of two villages in Natore district; dysentery, intestinal dysfunction by the tribal healers of Gor tribe of Sylhet district; to increase energy by the tribal healers of Oraon tribe of Sylhet district; headache, stuttering in children by the TMPS of the Rai Clan of the Tipra tribe of Sylhet Division; dysentery, blood dysentery by a FMP of a village in Faridpur district; dysentery, abdominal pain by TMPS of two Maarma tribal communities in two villages of Khagragharhi district; dysentery, to enhance memory by a Pahan TMP in Dinajpur district; diarrhea, dysentery, stomach pain by FMPs and TMPS in the vicinity of Lawachara Forest Reserve, Moulibazar district; ulcer by FMPs of three areas in Firojpur district; lack of breast milk following childbirth by the Santal tribe residing in Rajshahi district; gastric disorder, stomach pain, diarrhea, blood dysentery, fever, cough by the Tripura tribe residing in Chittagong Hill Tracts, Bangladesh; gastrointestinal disorders by FMPs of Badarganj and Shekhertek villages in Rangpur district; fever, pain by FMPs of Terbaria and Babra villages in Tangail district; jaundice, dysentery by FMPs of several areas of Faridpur and Rajbari districts; stomach pain by TMPS of Naik clan of Rajbongshi tribe of Moulibazar district; stomach pain in children, dysentery by TMPS of Rai Khatriya tribe of Pabna district; rheumatic problems, gastric problems by a Kush tribal practitioner practicing among Garo and Kush tribes in Sherpur district; bone fracture by folk herbalists in Comilla district; helminthiasis, stomach ache by TMPS of the Harbang clan of the Tripura tribe of Minsharai area, Chittagong district; loss of appetite, diarrhea by TMPS of the Naq clan of the Rai Ghatural tribe in Moulibazar district; gastric problems by FMPs of Dhamrai sub-district, Dhaka district; diarrhea, dysentery by the Teli clan of the Telegu tribe of Moulibazar district; abdominal pain, gastric trouble by TMPS of the Manipuri tribe in Kamalganj Upazilla, Moulibazar district; diarrhea, dysentery by TMPS of the Bauri tribal community of Moulibazar district; stomach disorders by a TMP of the Deb barma clan of the Tripura tribe of Moulibazar district; jaundice by TMPS of the Hodi tribe in Sherpur district; anemia by TMPS of Mro community of Gazalia Union in Bandarbans district. |

C. tamala (Buch.-Ham.) T.Nees & C.H.Eberm | Bloating, indigestion by FMPs of Sylhet Division, Bangladesh; excessive sweat, appearance of small pustules on the body due to excessive heat or sweating which itches in Shitol Para village, Jalalotaki district; for strong teeth by FMPs of Daudkandi sub-district of Comilla district; coughs, cold by FMPs of Dinajpur district; whooping cough by FMPs of six villages in Greater Naogaon district; diabetes, cold by FMPs of four villages in Natore and Rajshahi districts; coughs, vomiting, loss of appetite by FMPs of Bhola district; influenza by a FMP of Jhalokati in Barisal district; infertility in woman by FMPs of Chaudanga district; puerperal fever, rheumatic pain by the TMPS of the Rai Clan of the Tipra tribe of Sylhet Division; excessive sexual desire, coughs, bloating, piles, loss of appetite, sexual disorder by FMPs of three villages in Sreepur Upazilla, Bangladesh. |
Magura district [80]; excessive sexual desire, coughs, flatulence, piles, bloating, loss of appetite, sexual disorder by FMPs of two villages in Bagerhat district [88]; coughs, bloating, appetite stimulant, biliary disorders, piles by the Santal tribe residing in Thakurgaon district [111]; colic in Paikgacha sub-district of Khulna district [113].

**Cinnamomum verum** J. Presl.  
Dandruff, vomiting by FMPs of Daudkandi sub-district of Comilla district [73]; bone fracture, asthma, uterine problems by FMPs of several areas of Faridpur and Rajbari districts [55]; infertility in woman by FMPs of Chuadanga district [66]; stomach pain, puerperal fever, rheumatic pain, stomach pain by the TMPs of the Rai Clan of the Tipra tribe of Sylhet Division [68]; any type of cancer by TMPs of Kole and Rai tribes of Rajshahi and Nawabganj districts [73]; pain by TMPs of the Nag clan of the Rai Ghatual tribe in Moulibazar district [96]; to strengthen stomach by a FMP of Jamalpur district [106]; to increase sperm count, biliary disorders, rheumatism by the Santal tribe residing in Thakurgaon district [111].

**Cissus quadrangularis** L.  
Wounds and sprains by the Garo tribe living in Netrakona district [19]; bone fracture in two villages of Rajshahi district [38]; tonic, spray, sedative by FMPs of three villages in Natore and Rajshahi districts [43]; bone fracture by FMPs of Daudkandi sub-district of Comilla district [44]; bone fracture by the Garo tribe inhabiting the Madhupur forest region of Bangladesh [46]; rheumatic fever, joint pain by FMPs of Noakhali district, pain by FMPs of Fenzi district [47]; bone fracture by FMPs of Balidha village, Jessore district [50]; bone fracture by FMPs of Station Purbo Para village, Jamalpur district [33]; bone fracture by FMPs of Shetabganj village, Dinajpur district [32]; bone fracture by FMPs of Vitabila village in Pabna district [52]; bone fracture, spray, bone fracture by FMPs of three villages in Kurigram district [58]; bone fracture in hand or leg by TMPs of 15 clans of the Garo tribe of Madhupur, Tangail district [63]; bone fracture by FMPs of two villages in Natore district [31]; bone fracture in hands or legs by FMP from Jhenaidah district [66]; bone fracture by a Fahan TMP in Dinajpur district [71]; bone fracture in hands or legs by TMPs of Kole and Rai tribes of Rajshahi and Nawabganj districts [73]; bone fracture by the Santal tribe residing in Rajshahi district [77]; bone fracture by TMPs of Bongshi tribe in Tangail district [82]; bone fracture by FMPs of several areas of Faridpur and Rajbari districts [83]; bone fracture by TMPs of the Murmu tribal community residing in Rajshahi district [87]; bone fracture by TMPs of the Khatriya and Kashta clans of the Bagdi tribe in Rajbari district [89]; bone fracture by FMPs of Dinajpur district [97]; bone fracture by TMPs of the Manipuri tribe in Kamalganj Upazila, Moulibazar district [101]; bone fracture by a FMP of Sreemangal Upazila in Moulivibazar district [105]; pain in hand or leg by FMPs of three villages in Kurigram district [58]; bone fracture by TMPs of Station Purbo Para village, Jamalpur district [33]; bone fracture by FMPs of two villages in Bagerhat district [88]; carminative, gall bladder diseases by FMPs of Bheramara area in Kushtia district [110]; bone fractures, pain due to fractures by the Santal tribe residing in Thakurgaon district [111]; indigestion in Paikgacha sub-district of Khulna district [113].

**Citrus acida** Pers.  
Dandruff, vomiting by FMPs of Daudkandi sub-district of Comilla district [44]; loss of appetite, indigestion, vomiting tendency, acne, dandruff by FMPs of Station Purbo Para village, Jamalpur district [33]; facial scars and spots, facial blemishes by FMPs of Terbaria and Balia villages in Tangail district [81]; helminthiasis, abdominal discomfort, to increase appetite, flatulence, coughs, piles by FMPs of two villages in Bagerhat district [88]; carminative, gall bladder diseases by FMPs of Bheramara area in Kushtia district [110]; bone fractures, pain due to fractures by the Santal tribe residing in Thakurgaon district [111]; indigestion in Paikgacha sub-district of Khulna district [113].

**Citrus grandis** Hassk.  
Appetite stimulant, vomiting, fever by FMPs of Sylhet Division, Bangladesh [41]; aphrodisiac by FMPs of Balidha village, Jessore district [50]; to increase appetite, blood purifier, fever by FMPs of Station Purbo Para village, Jamalpur district [33]; loss of appetite, vomiting, fever by the tribal healers of Oraon tribe of Sylhet district [67]; fever by FMPs of two areas in Pirojpur district [74]; to increase strength, carminative, indigestion by FMPs of Bheramara area in Kushtia district [110]; deformities in head of young children by the Santal tribe residing in Thakurgaon district [111].

**Clerodendrum viscosum** Vent.  
Lice infections by the Garo tribe living in Netrakona district [19]; gastrointestinal disorders in Vasu Bihar village, Bogra district [39] coughs in children by FMPs of Sylhet Division, Bangladesh [41]; nausea, vomiting, puerperal fever in Shitol Para village, Jhalokati district [42]; tonic, gastritis, dermatitis, dysentery by FMPs of three villages in Natore and Rajshahi districts [43]; helminthiasis, dysentery, jaundice by FMPs of Dinajpur district [45]; colic pain by the Garo tribe inhabiting the Madhupur forest region of Bangladesh [46]; coughs, asthma, skin diseases, snake bite, gonorrhea, low semen, leucorrhoea by FMPs of Noakhali district [47]; itch by FMPs in villages by the Padma River of Rajshahi district [48]; gastrointestinal disorders by FMPs of Vasu Bihar village, Bogra district [49]; helminthiasis by FMPs of Balidha village, Jessore district [50]; blood dysentery, dysentery, infections by FMPs of...
Table 7 Other reported ethnomedicinal uses of the plants in Bangladesh (Continued)

| Plant          | Uses                                                                 |
|---------------|----------------------------------------------------------------------|
| Coccinia cordifolia (L.) Cogn. | Total paralysis or numbness of body, burning sensations in head or soles of feet by FMPs of two villages in Rajshahi district [38]; burning sensations during urination, diabetes by FMPs of Sylhet Division, Bangladesh [41]; burning sensations in the body, blood dysentery, scabies, leucoderma, diabetes in Shitl Para village, Jhalokati district [42]; coughs, diabetes, dysentery, emetic, burn by FMPs of three villages in Natore and Rajshahi districts [43]; mental disease, diabetes, by TMPs of Daudkandi sub-district of Comilla district [105]; skin eruption, fever, dysentery by TMPs of Santal tribal community residing in Thakurgaon district [111]; burning sensations in the chest, salty taste in mouth when burping, flatulence, gastric pain by TMPs of the Sibghe clan of the Khumi tribe of Thanchi sub-district in Bandarban district [115]. |
Other reported ethnomedicinal uses of the plants in Bangladesh (Continued)

**Table 7**

| Plant Name                          | Ethnomedicinal Uses                                                                 |
|-------------------------------------|------------------------------------------------------------------------------------|
| *Cocos nucifera* L.                | Skin diseases, skin spots, diarrhea by the Garo tribe living in Netrakona district |
|                                     | to strengthen hair, debility by FMPs of Sylhet Division, Bangladesh [41]; ringworm,  |
|                                     | oral infection, gingivitis, pain in animal in Shitol Para village, Jhalokati district |
|                                     | diuretic, helminthiasis, jaundice, acne, lack of appetite by FMPs in villages by the |
|                                     | Bangali River of Bogra district [48]; to keep head cool, diabetes by FMPs of Station |
|                                     | Purbo Para village, Jamalpur district [33]; hair loss, skin sores, head lice by a FMP |
|                                     | of Savar in Dhaka district [60]; skin disease by FMPs of three areas in Pirojpur district |
|                                     | [74]; biliary problem, burning sensations from dehydration, hematemesis,           |
|                                     | hyperacidity by FMPs of two villages in Bagerhat district [88]; jaundice,           |
|                                     | anti-inflammatory, acne by TMs of Santal tribe of Rangpur district [107]; syphilis,  |
|                                     | jaundice, diabetes, cholera by FMPs of Boalia sub-district, Rajshahi district [109].|
| *Colocasia esculenta* (L.) Schott  | Cuts and wounds by the Garo tribe living in Netrakona district [19]; severe jaundice,  |
|                                     | digestive aid, constipation in Shitol Para village, Jhalokati district [42]; colic, |
|                                     | indigestion by FMPs of three villages in Natore and Rajshahi districts [43]; astringent, |
|                                     | carminative, scar, tumor, infertility in male or female by FMPs in villages by the |
|                                     | Bangali River of Bogra district [48]; rheumatic pain, paralysis by FMPs of Shetabganj |
|                                     | village, Dinajpur district [32]; rheumatic pain, paralysis by FMPs of three villages |
|                                     | in Kurigram district [58]; severe headache by FMPs and TMs in the vicinity of       |
|                                     | Lawachara Forest Reserve, Moulvibazar district [72]; cuts and wounds to stop       |
|                                     | bleeding, blood purifier, to strengthen bones by FMPs of Dhamrai sub-district,      |
|                                     | Dhaka district [97]; diabetes by the Teli clan of the Techuge tribe of Moulvibazar |
|                                     | district [100]; anemia, malnutrition by TMs of the Manipuri tribe in Kamalganj       |
|                                     | Upazila, Moulvibazar district [101]; rheumatic pain by a TMP of the Deb barma clan |
|                                     | of the Tripura tribe of Moulvibazar district [103]; infections, whitish or darkish  |
|                                     | pathes of skin on face, infertility by a FMP of Jamalpur district [106]; piles,      |
|                                     | diarrhea, dysentery, wound by TMs of Santal tribe of Rangpur district [107]; prolapse |
|                                     | of uterus by TMs of the Hodi tribe in Sherpur district [112]; astringent, dermatitis, |
|                                     | bloating, tiger bite, helminthiasis, emetic by FMPs of two villages by the Rupsha    |
|                                     | River in Bagerhat district [120].                                                |
| *Curcuma longa* L.                | Skin diseases in Vasu Bihar village, Bogra district [39]; helminthiasis, itching by |
|                                     | FMPs of Sylhet Division, Bangladesh [41]; jaundice, skin disorders, to increase     |
|                                     | brightness of skin in Shitol Para village, Jhalokati district [42]; gonorrhea,      |
|                                     | anemhemtic, sore throat, hepatitis, appetite, allergy, eye disorders by FMPs of      |
|                                     | three villages in Natore and Rajshahi districts [43]; acne by FMPs of Daudkandi     |
|                                     | sub-district of Comilla district [44]; allergy, skin diseases, scabies, leprosy by  |
|                                     | FMPs in villages by the Ghaghrot River of Rangpur district [48]; skin diseases by   |
|                                     | FMPs of Vasu Bihar village, Bogra district [49]; excessive bile secretion by FMPs of |
|                                     | Balidha village, Jessore district [50]; allergy by FMPs of Station Purbo Para      |
|                                     | village, Jamalpur district [33]; filariasis by FMPs of Shetabganj village,         |
|                                     | Dinajpur district [32]; to improve skin texture, sprain by FMPs of Daulatdia Ghat, |
|                                     | Kushtia district [51]; helminthiasis, skin diseases, loss of appetite,             |
|                                     | to increase memory by FMPs of a village in Narayanganj district [53]; hypertension,  |
|                                     | abscess by tribal medicinal practitioners (TMs) of the Chakma tribe residing in     |
|                                     | Rangamati district [57]; bone fracture, sprain by FMPs of three villages in        |
|                                     | Kurigram district [58]; allergy by a FMP of Jhalokathi in Barial district [65];     |
|                                     | infertility in women, vomiting in children by FMPs of Chaudanga district [66]; bone  |
|                                     | fracture, sexulant by the tribal healers of Oraon tribe of Sylhet district [67];    |
|                                     | puerperal fever, scabies by the TMs of the Rai Clan of the Tripura tribe of Sylhet  |
|                                     | Division [68]; liver disorders by FMPs and TMs in the vicinity of Lawachara Forest  |
|                                     | Reserve, Moulvibazar district [72]; kala azar by TMs of Kole and Rai tribes of      |
|                                     | Rajshahi and Nawabganj districts [73]; arthritis, gout by FMPs of three areas in    |
|                                     | Pirojpur district [74]; nocturnal emission,                                        |
Table 7 Other reported ethnomedicinal uses of the plants in Bangladesh (Continued)

| Plant name | Uses |
|------------|------|
| Cynodon dactylon (L.) Pers. | Cuts and wounds by the Garo tribe living in Netrakona district [19]; yellowish coloration of urine, bleeding from cuts and wounds in two villages of Rajshahi district [38]; to stop bleeding in Vasu Bihar village, Bogra district [39]; wounds, infections by FMPs of Sylhet Division, Bangladesh [41]; to stop bleeding in Shitol Para village, Jhalokati district [42]; leukorrhea, gonorrhea, diabetes, stop bleeding, infertility by FMPs of three villages in Natore and Rajshahi districts [43]; to stop bleeding from cuts and wounds in two villages by the Rupsha River in Bagerhat district [120]. |
| Cuscuta reflexa Roxb. | Sexual diseases by the Garo tribe living in Netrakona district [19]; itches in Vasu Bihar village, Bogra district [39]; gastrointestinal disorders, body pain by FMPs of Sylhet Division, Bangladesh [41]; jaundice, liver diseases, uterus and liver pain in Shitol Para village, Jhalokati district [42]; alopecia, acne, glassiness of skin by FMPs of three villages in Natore and Rajshahi districts [43]; jaundice, helminthiasis by the Garo tribe inhabiting the Madhupur forest region of Bangladesh [46]; carminative by FMPs of Noakhali district [47]; itches by FMPs of Vasu Bihar village, Bogra district [49]; fever, jaundice, to maintain good health, to keep body cool by FMPs of Station Purbo Para village, Jamalpur district [33]; stoppage of urination by FMPs of six villages in Greater Naogaon district [53]; jaundice by a FMP of Gachhakher village in Tangail district [56]; female infertility, fever by FMPs of four villages in Natore and Rajshahi districts [61]; gastric troubles by FMPs of Bhola district [64]; anthrax in cattle, jaundice by the tribal healers of Oraon tribe of Sylhet district [67]; jaundice by FMPs and TMPs in the vicinity of Lawachara Forest Reserve, Moulvibazar district [72]; sexual stimulant by the Marma tribe living in Naikongchhari, Bandarban district [75]; fever, body pain, rheumatic pain, sex stimulant by the Rakhain tribe inhabiting the Chittagong Hill Tracts region [76]; excessive bleeding following menstruation by the Santal tribe residing in Rajshahi district [77]; edema, body ache, sexual stimulant, maintain good hepatic functions, jaundice by the Tripura tribe residing in Chittagong Hill Tracts, Bangladesh [78]; hair loss by FMPs of Naik clan of Rajbongshi tribe of Moulvibazar district [84]; jaundice by TMPs of the Tripura tribe residing in Comilla district [90]; diabetes by TMPs of the Habibgan clan of the Tripura tribe of Mirsharai area, Chittagong district [95]; to stop bleeding from wounds, jaundice by FMPs of Dhamrai sub-district, Dhaka district [97]; jaundice by FMPs of Barisal Town, Barisal district [98]; aphrodisiac, diabetes by TMPs of Tonchongya tribe of Roangchaari Upazila in Bandarban district [99]; abdominal pain, helminthiasis, skin diseases by FMPs of the Manipuri tribe in Kamalganj Upazila, Moulvibazar district [101]; fever, jaundice by TMPs of Daudkandi sub-district of Comilla district [102]; low sperm count, jaundice by a FMP of Sreemangal Upazila in Moulvibazar district [105]; heart disorders by Christians living in Mirzapur village of Dinajpur district, Bangladesh [108]; indigestion in Rampal sub-district of Bagerhat district [113]. |
Table 7 Other reported ethnomedicinal uses of the plants in Bangladesh (Continued)

- **Rajshahi** districts [61]; to stop bleeding from cuts and wounds by FMPs of Bhola district [64]; blood dysentery by a FMP of Jhalokati in Barisal district [65]; infections, bleeding while pregnant by FMPs of Chaudanga district [66]; headache, infection, erectile dysfunction by the tribal healers of Oraon tribe of Sylhet district [67]; lesions on tongue by the TMs of the Rai Clan of the Tipra tribe of Sylhet Division [68]; to stop bleeding by TMs of two Marma tribal communities in two villages of Khagrachhari district [69]; vomiting by TMs and FMPs practicing within a Khasia tribal community in Jalilganj area, Sylhet district [70]; to stop bleeding from cuts and wounds by FMPs and TMs in the vicinity of Lakhauti Forest Reserve, Moulibazar district [72]; coughs, cuts and wounds by FMPs of Badarganj and Shekhertek villages in Rangpur district [79]; loss of libido, provides a feeling of satisfaction, biliary/hepatic disorders, thirst, vomiting, burning sensations in the body, blood purifier, coughs, fainting, loss of appetite by FMPs of three villages in Shreepur Upazilla, Magura district [80]; bleeding from external cuts and wounds by FMPs of several areas of Faridpur and Rajbari districts [83]; stomach infections, infections of uterus, to stop bleeding from external cuts and wounds by TMs of Rai Khatriya tribe of Pabna district [85]; to stop bleeding by FMPs of Dhamrai sub-district, Dhaka district [97]; excessive bleeding during menstruation by FMPs of Barisal Town, Barisal district [98]; cuts and wounds by TMs of the Manipuri tribe in Kamalganj Upazila, Moulibazar district [101]; jaundice by TMs of the Bauri tribal community of Moulibazar district [102]; chicken pox by a FMP of Jamalpur district [106]; tonsillitis, astringent, snake bite, dog bite by TMs of Santal tribe of Rangpur district [107]; diabetes by the Santal tribe residing in Thakurgaon district [111]; bleeding through the nose and mouth and passing of blood with urine by TMs of the Hodli tribe in Sherpur district [112]; physical weakness by a TMP of the Sardar (Dhango) community in Chuadanga district [116];

**Datura metel** L.

Mental disorders by the Garo tribe living in Netrakona district [19]; pain in two villages of Rajshahi district [38]; paralysis in Faridpur district [40]; body ache by FMPs of Sylhet Division, Bangladesh [41]; head lice; pain and swelling in breasts of females in Shitol Para village, Jhalokati district [42]; rheumatoid arthritis, anthelmintic, carminative, acne, impotency, antidote to poison by FMPs of three villages in Natore and Rajshahi districts [43]; joint pain, pain in leg by FMPs of Dinajpur district [45]; head lice infestation by FMPs of Balidha village, Jessore district [50]; dog bite, helminthiasis by FMPs of Shetabganj village, Dinajpur district [32]; swelling and pain, excessive bleeding, to enlarge pupil of eye, swelling of gums and base of ears, breast pain by FMPs of Daulatdia Ghat, Kushtia district [51]; body pain by FMPs of severa village in Pabna district [52]; respiratory difficulties by FMPs of six villages in Greater Naogaon district [53]; joint pain by FMPs of seven villages in Ishwardi Upazilla, Pabna district [54]; skin diseases, dandruff by FMPs of a village in Narayanganj district [55]; cuts and wounds (to stop bleeding) by tribal medicinal practitioners (TMs) of the Chakma tribe residing in Rangamati district [57]; dog bite, helminthiasis, elephantiasis by FMPs of three villages in Kurigram district [58]; body irritation by FMPs of four villages in Natore and Rajshahi districts [61]; mucus, pain, insanity by TMs of 15 clans of the Garo tribe of Madhupur, Tangail district [63]; rheumatism by FMP from Jhenaidah district [66]; intestinal dysfunction, wounds, paralysis by the tribal healers of Oraon tribe of Sylhet district [67]; whole body pain by the TMs of the Rai Clan of the Tipra tribe of Sylhet Division [68]; paralysis by a FMP of a village in Faridpur district [40]; pus in ears by a Pahan TMP in Dinajpur district [71]; abscess by FMPs of three areas in Pirojpur district [74]; throat pain in children by the Santal tribe residing in Rajshahi district [77]; sudden insanity by FMPs of Badarganj and Shekhertek villages in Rangpur district [79]; antidote to poisoning by FMPs of Terbaria and Bhaba villages in Tangail district [81]; pain, ear ache, paralysis by TMs of Bongshi tribe in Tangail district [82]; being possessed by ‘ghosts’ by TMs of Rai Khatriya tribe of Pabna district [85]; allergy, asthma by TMs of the Tripura tribe residing in Comilla district [90]; abscess, shrinking of pupils in the eyes, swelling of ear lobes by a FMP practicing among tea garden workers in Sreemangal, Moulibazar district [92]; scabies, eczema, allergy by FMPs of Barisal Town, Barisal district [98]; cough, headache, dizziness, bloating by TMs of the Harbang clan of the Tripura tribe of Mirsharai area, Chittagong district [95]; asthma, pain in eyes, insanity by Christians living in Mirzapur village of Dinajpur district, Bangladesh [108]; joint pain by TMs of the Sigibe clan of the Khumi tribe of Thanchi sub-district in Bandarban district [113]; hypotonic, helminthiasis, snake bite, dog bite, antidote to poisoning by FMPs of two villages by the Rupsha River in Bagerhat district [120];

**Delonix regia** (Bojer) Raf.

To increase sexual energy by the tribal healers of Oraon tribe of Sylhet district [67].

**Dillenia indica** L.

Sex stimulant by FMPs of Daudkandi sub-district of Comilla district [44]; dysentery by FMPs of Dinajpur district [45]; loss of appetite, to prevent stomach upsets, diarrhea, dysentery by FMPs of a village in Narayanganj district [55]; dysentery, sexually transmitted diseases by FMPs of three villages in Kurigram district [58];

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indigestion, loss of appetite by a FMP of a village in Faridpur district [40]; to enhance digestion by FMPs of three areas in Pirojpur district [74]; edema, abscess, appetite stimulant by the Tripura tribe residing in Chittagong Hill Tracts, Bangladesh [78]; hydrocele, contraceptive by FMPs of Barisal Town, Barisal district [98]; diarhoea by TMs of the Baui tribal community of Moulvibazar district [102].

*Diospyros peregrina* Gürke

Mucus with stool by FMPs in villages by the Padma River of Rajshahi district [48]; constipation, anorexia by FMPs of Vasu Bihar village, Bogra district [49]; leukocoria, thorn-induced infections, gangrene, cough, mucus, biliary diseases, blood purifier by FMPs of Daulatdia Ghat, Kushtia district [51]; oral lesions, skin infections by the TMs of the Rai Clan of the Tipra tribe of Sylhet Division [68]; dysentery, diabetes by FMPs of three areas in Pirojpur district [74]; fever, skin problems, rheumatic pain, cold, respiratory problem by the Rakhain tribe inhabiting the Chittagong Hill Tracts region [76]; dysentery, injury by FMPs of Dhamrai sub-district, Dhaka district [97].

*Elettaria cardamomum* (L.) Maton

To increase strength, appetite stimulant by FMPs of Station Purbo Para village, Jamalpur district [53]; infertility in women by FMPs of Chuaunda district [60]; coughs, blood disorders, anti-infective, abnormal palpitation of heart, poisonous bites, rheumatism, stomatitis, gum disorders, vomiting, respiratory distress by FMPs of two villages in Bagerhat district [88]; toothache by a FMP of Jamalpur district [106]; jaundice by a TMP of the Sardar (Dhango) community in Chuadanga district [116].

*Embelica officinalis* Gaertn.

To increase taste, jaundice, gastric problems, indigestion by the Garo tribe living in Netrakona district [19]; tooth pain in Vasu Bihar village, Bogra district [39]; loss of appetite in Faridpur district [40]; appetite stimulant, indigestion by FMPs of Sylhet Division, Bangladesh [41]; burning sensations in urinary tract, leukocoria, hair loss, reduce graying of hair in Shitol Para village, Jalalakati district [42]; alopoezia, appetizer by FMPs of three villages in Natore and Rajshahi districts [43]; loss of hair, to stop vomiting by FMPs of Daudkandi sub-district of Comilla district [44]; hair loss, indigestion, debility by FMPs of Dinajpur district [45]; tooth pain by FMPs of Vasu Bihar village, Bogra district [49]; to increase appetite, skin diseases, fever, to increase strength, burning sensations during urination, hair loss, graying of hair by FMPs of Station Purbo Para village, Jamalpur district [53]; to prevent hair loss, respiratory tract disorders, hepatic disorders, gastrointestinal disorders by FMPs of Shetabganj village, Dinajpur district [32]; to stimulate appetite by FMPs of six villages in Greater Naogaon district [53]; loss of hair, irritation during urination by FMPs of seven villages in Ishwardi Upazilla, Pabna district [54]; stomach disorders, flatulence, indigestion by a FMP of Gachabari village in Tangail district [56]; haemorrhoids, gastrointestinal disorders, ulcer, gastric pain by tribal medicinal practitioners (TMs) of the Chakma tribe residing in Rangamati district [57]; blood purifier, anemia, hair loss, coughs, spleen disorders, gastrointestinal disorders by FMPs of three villages in Kurigram district [58]; graying of hair by FMPs of Goala tribe of Moulvibazar district [59]; hair loss by a FMP of Savar in Dhaka district [60]; to increase sexual strength, to improve appetite by TMs of 15 clans of the Garo tribe of Madhupur, Tangail district [63]; jaundice, to keep head cool, hair loss, graying of hair by FMPs of Bhola district [64]; blood dysentery by a FMP of Jhalokathi in Barisal district [65]; intestinal dysfunction, blood purifier by the tribal healers of Oraon tribe of Sylhet district [67]; headache, conjunctivitis by the TMs of the Rai Clan of the Tipra tribe of Sylhet Division [68]; loss of appetite by a FMP of a village in Faridpur district [40]; mucus by TMs of two Marma tribal communities in two villages of Khagrachhari district [69]; fever by TMs and FMPs practicing within a Khania tribal community in Jafalong area, Sylhet district [70]; diabetes, hair loss, dandruff, to strengthen hair by a Pahan TMP in Dinajpur district [71]; hair loss, blood purifier by FMPs and TMs in the vicinity of Lawachara Forest Reserve, Moulvibazar district [72]; to maintain good health by FMPs of three areas in Pirojpur district [74]; fever, skin problems, loss of appetite, poisonous bites of animals or insects, diabetes by the Rakhain tribe inhabiting the Chittagong Hill Tracts region [76]; long-term fever, loss of appetite, sexual stimulant by the Tripura tribe residing in Chittagong Hill Tracts, Bangladesh [78]; to increase libido by FMPs of Badarganj and Shakhertek villages in Rangpur district [79]; biliary problem, alleviation of respiratory, stomach or hepatic problem, diabetes, fatigue, thirst, burning sensations in body especially in palms of hands or soles of feet, vomiting tendency, insanity by FMPs of three villages in Sreepur Upazilla, Magura district [80]; stomach troubles, gastric problems by FMPs of several areas of Faridpur and Rajbari districts [83]; anemia by TMs of the Pankho tribe of Bilachari Union, Rangamati district [86]; to increase strength, to clear urine by TMs of Rai Khatriya tribe of Pabna district [85]; vaginitis, burning sensations by FMPs of two villages in Bagerhat district [88]; loss of sensitivity in skin, chronic mucous, continuous sneezing with running water from nose, loss of sensitivity in skin due to allergy, small pustules on skin of children by FMPs of Barisal Town, Barisal district [98]; aphrodisiac, energizer, fever, body ache by TMs.
of Tonchongya tribe of Roangchaari Upazila in Bandarban district [99];
cardiovascular disorders by TMPs of the Bauri tribal community of Moulvibazar
district [102]; bleeding from gums, loss of appetite, headache, paralysis by a TMP
of the Deb barma clan of the Tripura tribe of Moulvibazar district [103]; appetite,
gonorrhea, toothache, itch by FMPs of Boalia sub-district, Rajshahi district [109];
erectile dysfunction by FMPs of Bheramara area in Kushtia district [110]; mucus,
biliary disorders, loss of appetite, prevent hair loss by the Santal tribe residing in
Thakurgaon district [111]; diabetes, cardiovascular disorders, weakness of heart,
hysteria, osteoporosis by a TMP of the Sardar (Dhanpuri) community in Chuadanga
district [116]; anemia by TMPs of Mro community of Gashalia Union in Bandarban
district [118]; fistula, vitamin C deficiency, lack of appetite, diarrhoea, dysentery,
hepatitis, cold by FMPs of two villages by the Rupsha River in Bagerhat district [120].

**Table 7** Other reported ethnomedicinal uses of the plants in Bangladesh (Continued)

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**Enydra fluctuans** Lour.
Hepatitis in Vasu Bihar village, Bogra district [39]; blood problems, leucorrhoea in
Shitol Para village, Jalokati district [42]; rheumatoid arthritis, constipation, itch,
impotency, appetite, edema by FMPs of three villages in Natore and Rajshahi
districts [43]; chicken pox by FMPs in villages by the Ghaghott River of Rangpur
district [48]; rashes, sedative, carminative, dermatitis by FMPs in villages by the
Bangali River of Bogra district [48]; hepatitis by FMPs of Vasu Bihar village, Bogra
district [49]; to keep head cool, burning sensations in the body by FMPs of six
villages in Greater Naogaon district [53]; physical weakness, vision problems by
FMPs of seven villages in Ishwardi Upazilla, Pabna district [54]; gastric ulcer by
FMPs of three areas in Pirojpur district [74]; constipation, bitter, astringent, leprosy,
bleed secretion disorders, respiratory tract disorders, blood purifier by FMPs of three
villages in Shreepur Upazilla, Magura district [80].

**Feronia limonia** Swingle
To enhance digestion by FMPs of three areas in Pirojpur district [74].

**Ficus racemosa** L.
Diabetes by the Garo tribe living in Netrakona district [19]; dysentery by FMPs of
two villages in Rajshahi district [38]; coughs, blood dysentery by FMPs of Syylhet
Division, Bangladesh [41]; ‘prodor’ disease (any disease prior to, during or following
menstruation) in Shitol Para village, Jalokati district [42]; leucorrhoea by FMPs
of Noakhali district [47]; stomach ache by FMPs of Balidha village, Jessore
district [50]; to keep healthy, diabetes by FMPs of Station Porbo Para village, Jamalpur
district [33]; diabetes by FMPs of Vitbilia village in Pabna district [52]; dysentery by
FMPs of six villages in Greater Naogaon district [53]; pimples, eczema, bleeding due
to external cuts and wounds, burning sensations during urination by FMPs of seven
villages in Ishwardi Upazilla, Pabna district [54]; coughs, mucus, diarrhoea, dysentery,
debility by FMPs of a village in Narayanganj district [55]; loss of sexual desire,
roughness of skin, biliary disorders, coughs, blood purifier, change of color of skin
as in jaundice, acne, astringent by FMPs of three villages in Shreepur Upazilla, Magura
district [80]; weakness, eye diseases, diabetes by TMPs of Bangshi tribe in Tangail
district [82]; jaundice by FMPs of several areas of Faridpur and Rajbari districts [83];
to induce urination, to increase strength, gonorrhoea, urethritis, to increase sexual
desire, roughness of skin, biliary disorders, coughs, blood purifier, change of color
of skin as in jaundice, acne, astringent by FMPs of two villages in Bagerhat
district [88]; diabetes by a Chakma tribal practitioner practicing among Garo and
Kush tribes in Sherpur district; [93]; diabetes by FMPs of Barisal Town, Barisal district
[98]; headache, small pox, flatulence, cancer, dermatitis, burn by FMPs of two
villages by the Rupsha River in Bagerhat district [120].

**Hibiscus rosa-sinensis** L.
Dysentery, debility by the Garo tribe living in Netrakona district [19]; leucorrhoea in
two villages of Rajshahi district [38]; dysentery by FMPs of Syylhet Division,
Bangladesh [41]; gonorrhoea, constipation, sex stimulant, hematemesis, amenorrhoea
in Shitol Para village, Jalokati district [42]; appetite, anti-hemorrhagic by FMPs of
three villages in Natore and Rajshahi districts [43]; lack of calcium by FMPs of
Daudkandi sub-district of Comilla district [44]; stomach upsets and dysentery by the
Garo tribe inhabiting the Madhupur forest region of Bangladesh [46];
leucorrhoea by FMPs of Noakhali district [47]; loss of appetite by FMPs of Vasu
Bihar village, Bogra district [49]; menstrual irregularities by FMPs of Balidha village,
Jessore district [50]; to improve hair quality, coughs, flatulence by FMPs of
Shetabganj village, Dinajpur district [32]; leucorrhoea, passing of urine with
women, badhok disease (infertility in women due to problem in uterus)
by FMPs of Vitbilia village in Pabna district [52]; menstrual difficulties by FMPs of
six villages in Greater Naogaon district [53]; irregular menstruation, burns, blood
dysentery by FMPs of a village in Narayanganj district [55]; prolonged menstruation
by a FMP of Gachhabari village in Tangail district [56]; diarrhoea, infections on palm of
hand by tribal medicinal practitioners (TMPs) of the Chakma tribe residing in
Rangamati district [57]; hair loss by TMPs of Gaola tribe of Moulvibazar district [59];
general weakness, debility by FMPs of four villages in Natore and Rajshahi districts
[61]; excessive bleeding, leucorrhoea by TMPs of the Tudu sub-clan of the Santal tribe
Other reported ethnomedicinal uses of the plants in Bangladesh (Continued)

| Table 7 Other reported ethnomedicinal uses of the plants in Bangladesh (Continued) |
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| in Joypurhat district [62]; leucorrhea by TMPs of 15 clans of the Garo tribe of Madhupur, Tangail district [63]; infertility by FMP from Jhenaidah district [66]; premature ejaculation by the tribal healers of Oraon tribe of Sylhet district [67]; tongue lesions, conjunctivitis, puerperal fever by the TMPs of the Rai Clan of the Tipra tribe of Sylhet Division [68]; dysentery in cattle, loss in humans by TMPs of two Marma tribal communities in two villages of Khagrachhari district [69]; injury by a Pahan TMP in Dinajpur district [71]; blood dysentery by FMPs and TMPs in the vicinity of Lawachara Forest Reserve, Moulibazar district [72]; to induce vomiting, irregular menstruation by FMPs of three areas in Pirojpur district [74]; cataract by the Marma tribe living in Naikhongchhari, Bandarban district [75]; conjunctivitis, helminthiasis, viral fever, any fever, rheumatic pain, diabetes by the Rakhain tribe inhabiting the Chittagong Hill Tracts region [76]; puerperal fever by the Santal tribe residing in Rajshahi district [77]; infertility in females, to prevent death of infant following birth by TMPs of Rai Khatiya tribe of Pabna district [85]; burning sensations during urination by a Chakma TMP practicing among Garo and Kush tribes in Sherpur district; dysentery by a Garo TMP practicing among Garo and Kush tribes in Sherpur district [93]; hair loss, excessive graying of hair, loss of brightness in hair by folk herbalists in Comilla district [94]; burning sensations during urination, yellowish color of urine by TMPs of the Nag clan of the Rai Ghatual tribe in Moulibazar district [96]; frequent urination by FMPs of Dhamrai sub-district, Dhaka district [97]; dysentery by TMPs of the Manipuri tribe in Kamalganj Upazila, Moulibazar district [101]; being touched by 'evil wind' by TMPs of the Soren clan of the Santal tribe in Rajshahi district [104]; blood dysentery by a FMP of Sreemangal Upazila in Moulibazar district [105]; menstrual disorders by FMPs of Bheramara area in Kushtia district [110]; premature ejaculation by the Santal tribe residing in Thakurgaon district [111].

*Hyptis suaveolens* (L.) Poit.

Constitution by FMPs of Sylhet Division, Bangladesh [41]; gonorrhea by the Garo tribe inhabiting the Madhupur forest region of Bangladesh [46]; constipation, dysentery, burning sensations in stomach (acidity) by FMPs of a village in Narayanganj district [53]; low semen density, intestinal dysfunction by the tribal healers of Oraon tribe of Sylhet district [67]; tremor, constipation, burning sensations in the hands or body by TMPs of two Marma tribal communities in two villages of Khagrachhari district [69]; weakness by FMPs and TMPs in the vicinity of Lawachara Forest Reserve, Moulibazar district [72]; leucorrhea in women, low sperm density in men by TMPs of Bongshi tribe in Tangail district [82]; stomach ache in children by TMPs of the Panikho tribe of Biliauchi Union, rangamati district [86]; constipation by TMPs of the Habang clan of the Tripura tribe of Mirsharai area, Chittagong district [95]; cooling agent, kidney disease, urinary tract infections, dysuria, laxative by TMPs of Tonchongya tribe of Roangchaari Upazila in Bandarban district [99]; tumor, rheumatism by TMPs of the Manipuri tribe in Kamalganj Upazila, Moulibazar district [101]; physical weakness, sense of hotness in head by a TMP of the Deb barma clan of the Tripura tribe of Moulibazar district [103]; constipation, burning sensations during urination, anaemia, low sperm count by a FMP of Sreemangal Upazila in Moulibazar district [105]; malaria, headache, insect repellent by TMPs of Santal tribe of Rangpur district [107]; liver diseases, cancer, constipation by FMPs of Boalia sub-district, Rajshahi district [109]; constipation in Paikgacha sub-district of Khulna district [113]; diabetes by TMPs of Tonchongya tribe of Bandarban district [114].

*Ipomoea aquatica* Forsk.

Galactagogue, leucorrhea in Shitol Para village, Jhalokati district [42]; rheumatic swelling by FMPs of Noakhali district [47]; snake bite, astrigent, skin disorder by FMPs in villages by the Bangali River of Bogra district [48]; gall bladder stones by FMPs of Daulatdia Ghat, Kushtia district [51]; to keep head cool, burning sensations in hands, feet, head or body by TMPs of six villages in Greater Naogaon district [53]; jaundice, diarrhoea, skin diseases by FMPs of a village in Narayanganj district [55]; constipation by tribal medicinal practitioners (TMPs) of the Chakma tribe residing in rangamati district [57]; antidote to poisoning, chicken pox by FMPs of three villages in Kushtia district [58]; gonorrhea, antidote to poisoning, to increase milk of nursing mother, low sperm count, low semen volume by TMPs of Bhola district [64]; cuts and wounds by a Pahan TMP in Dinajpur district [71]; gonorrhea, low sperm count by FMPs of three areas in Pirojpur district [74]; snake bite, haemorrhoids, indigestion, burns by FMPs of two villages by the Rupsha River in Bagerhat district [120].

*Kalanchoe pinnata* (Lam.) Pers.

Gall bladder stones, bloating, to stop bleeding from cuts and wounds in Rajshahi district [38]; asthma in Vasu Bihar village, Bogra district [39]; kidney stones in Faridpur district [40]; burning sensations during urination, kidney stones by FMPs of Sylhet Division, Bangladesh [41]; diarrhoea, to stop bleeding, irregular urination, burning sensations in urinary tract in Shitol Para village, Jhalokati district [42]; colic, sexual disorders, appetizer by FMPs of three villages in Natore and Rajshahi districts.
Table 7 Other reported ethnomedicinal uses of the plants in Bangladesh (Continued)  

| Plant Name | Uses | Community/Region |
|------------|------|------------------|
| *Lannea coromandelica* (Houtt.) Merr. | | |
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- Gastric problems by FMPs of Daulkandi sub-district of Comilla district [44]; kidney stones, any type of wounds, indigestion by FMPs of Dinajpur district [44]; urinary problems, kidney or gall bladder stones by FMPs of Noakhali district [47]; kidney and gall bladder stones by FMPs in villages by the Padma River of Rajshahi district [48]; asthma by FMPs of Vasu Bihar village, Bogra district [49]; stomach ache by FMPs of Balidha village, Jessore district [50]; to clarify urine, hematemesis, cough, mucus, epilepsy, stomach ache in children by FMPs of Station Purbo Para village, Jamalpur district [33]; respiratory tract disorders, hepatic disorders, gastrointestinal disorders, spleen disorders, acne by FMPs of Shehbazganj village, Dinajpur district [32]; gall bladder stones, pain from piles by FMPs of Mauldalia Ghat, Kushtia district [51]; gall bladder stones by FMPs of Vitbilia village in Pabna district [52]; bloating, gastrointestinal stones, kidney stones, gastrointestinal disorders by FMPs of six villages in Greater Naogaon district [53]; diarrhea, bleeding from cuts and wounds, gall bladder stones by FMPs of seven villages in Ishwardi Upazilla, Pabna district [54]; diarrhea, cuts and wounds by FMPs of a village in Narayanganj district [55]; urinary and sexual problems in men by a FMP of Gachabari village in Tangail district [56]; constipation, diabetes, stomach or kidney stones by tribal medicinal practitioners (TMPs) of the Chakma tribe residing in Ramganati district [57]; formation of stones in the stomach, headache by FMPs of three villages in Kurigram district [58]; urinary tract infections, kidney stones by a FMP of Savar in Dhaka district [60]; indigestion, cholelithiasis by FMPs of four villages in Natore and Rajshahi districts [61]; to stop bleeding of stomach cuts and wounds by TMs of 15 clans of the Garo tribe of Madhupur, Tangail district [63]; urinary disorders by FMPs of Bhola district [64]; haemorrhoids, blood dysentery, acne by a FMP of Jalokathi in Barisal district [65]; kidney stone, stomach stone, bloating by FMPs of two villages in Natore district [31]; hotness in head, headache by FMPs of Chaudanga district [66]; dysentery, indigestion by the TMs of the Rai Clan of the Tipra tribe of Sylhet Division [68]; kidney stones by a FMP of a village in Faridpur district [40]; long-term coughs, burning sensations in the stomach by TMs of two Marma tribal communities in two villages of Khagrachhari district [69]; heart disorders by FMPs and TMs in the vicinity of Lawachara Forest Reserve, Moulibazar district [72]; excessive urination, abdominal pain, dysentery, insecticide by FMPs of three areas in Pirojpur district [74]; muscle pain, scabies, boils, rheumatism by the Marma tribe living in Naikhongchhari, Bandarban district [75]; coughs, mucus, fever, sudden loss of consciousness (epilepsy-like), constipation, piles by the Tripura tribe residing in Chittagong Hill Tracts, Bangladesh [78]; kidney stones by FMPs of Badarganj and Shikhertek villages in Rangpur district [79]; stone formation in stomach by FMPs of Terbaria and Babla villages in Tangail district [81]; bitter, astringent, alleviation of respiratory, stomach or hepatic problems, piles, swelling or tumor, burning sensations during urination, kidney or gall bladder stones, spleen disorders, urinary problems arising from diabetes or other endocrinological disorders, vaginal diseases by FMPs of three villages in Sreepur Upazilla, Magura district [80]; alleviation or prevention of respiratory, stomach and hepatic problems, piles, swelling or tumor, burning sensations during urination, kidney or gall bladder stones, spleen disorders, urinary problems arising from endocrinological disorders like diabetes, vaginal diseases or disorders, vaginitis, insufficient sperm count by FMPs of two villages in Bagerhat district [88]; stomach disorders by TMs of the Khatriya and Kashya clans of the Bagdi tribe in Rajbari district [89]; kidney stones by TMs of the Tripura tribe residing in Comilla district [90]; burning sensations during urination by a Chakma TMP practicing among Garo and Kush tribes in Sherpur district, typhoid by a Chakma TMP practicing among Garo and Kush tribes in Sherpur district [93]; burning sensations in the stomach, cough and mucus in children by TMs of the Harbang clan of the Tripura tribe of Minharai area, Chittagong district [95]; pain, boils, abscess, rheumatism, eczema by TMs of Tonchongya tribe of Roangchaari Upazila in Bandarban district [99]; kidney or gall bladder stone, hypertension, cholera by TMs of Chakma tribe of Rangpanar Chara Area in Khagracharai district [34]; cold, dysentery, diabetes, heart diseases by TMs of the Manipuri tribe in Kamalganj Upazila, Moulibazar district [101]; spermatorrhea by a FMP of Sreemangal Upazila in Maulibazar district [105]; kidney and gall bladder stones by Christians living in Mizrapur village of Dinajpur district, Bangladesh [108]; headache, asthma, stone formation in any part of the body by FMPs of Boalia sub-district, Rajshahi district [109]; kidney stones by FMPs of Bheramara area in Kushtia district [110]; diarrhea in Rampal sub-district of Bagerhat district [113]; asthma by TMs of Mro community of Gazalia Union in Bandarbans district [118].

Semenal problems by the Garo tribe inhabiting the Madhupur forest region of Bangladesh [46]; puerperal fever by TMs of the Murmu tribal community residing in Rajshahi district [87].
### Table 7 Other reported ethnomedicinal uses of the plants in Bangladesh (Continued)

**Mangifera indica** L.

- Influenza, helminthiasis by the Garo tribe living in Netrakona district [19]; stomach pain by FMPs of two villages in Rajshahi district [38]; diabetes, dandruff, cracking of soles of feet by FMPs of Sylhet Division, Bangladesh [41]; impotency, diabetes, eye disorders by FMPs of three villages in Natore and Rajshahi districts [43]; dysentery by the Garo tribe inhabiting the Madhupur forest region of Bangladesh [46]; jaundice, carminative, dermatitis, lack of appetite, malaria, syphilis by FMPs in villages by the Ghaghrot River of Rangpur district [48]; dysentery, to prevent graying of hair by FMPs of Balidha village, Jessore district [50]; dysentery, headache by FMPs of Station Purbo Para village, Jamalpur district [33]; diarrhea, cracked soles of feet by FMPs of Shetabganj village, Dinajpur district [32]; diabetes by FMPs of Daulatdia Ghat, Kushtia district [51]; diarrhea, dysentery by FMPs of six villages in Greater Naogaon district [53]; toothache, tooth infections, dysentery by FMPs of a village in Narayanganj district [55]; tooth ache by a FMP of Gachabari village in Tangail district [56]; dysentery, passing of blood with urine by FMPs of three villages in Kurigram district [58]; to reduce fat in the body by a FMP of Savar in Dhaka district [60]; lung pain, gastric troubles by TMPs of 15 clans of the Garo tribe of Madhupur, Tangail district [63]; diabetes, sexual weakness by FMPs of Bhola district [64]; purperal fever by the TMPs of the Rai Clan of the Tipra tribe of Sylhet Division [68]; gastric problems by TMPs of two Marma tribal communities in two villages of Khagrachhari district [69]; jaundice by FMPs of Badarganj and Shekhertek villages in Rangpur district [79]; stomach pain by FMPs of several areas of Faridpur and Rajbari districts [83]; constipation by TMPs of Naik clan of Rajbongshi tribe of Moulibazar district [84]; jaundice by TMPs of the Tripura tribe residing in Comilla district [90]; diabetes by a Chakma tribal practitioner practicing among Garo and Kushi tribes in Sherpur district; [93]; piles, jaundice by folk herbalists in Comilla district [94]; stomach ache, cuts and wounds, meho (endocrinological disorder, diabetes) by FMPs of Barisal Town, Barisal district [98]; bloating, sex stimulant by a FMP of Shrernragul Upazilla in Maubibazar district [105]; eye diseases, antidote to poison, edema, cholera, dysentery, diabetes by FMPs of Boalia sub-district, Rajshahi district [109]; anti-inflammatory, jaundice itch by TMPs of Santal tribe of Rangpur district [112]; diarrhea by TMPs of Mro community of Gazalia Union in Bandarban district [118].

**Mikania cordata** (Burm.f.) B.L.Rob.

- To stop bleeding from cuts and wounds by FMPs of Sylhet Division, Bangladesh [41]; to stop bleeding from cuts and wounds in Shitol Para village, Jhalokati district [42]; skin diseases by FMPs of Dinajpur district [45]; gastric pain, ulcer, fresh wounds and cuts by the Garo tribe inhabiting the Madhupur forest region of Bangladesh [46]; dysentery, gastric ulcer, diabetes, cuts and wounds to stop bleeding by FMPs of Noakhali district [47]; diabetes, skin disorder by FMPs in villages by the Bangali River of Bogra district [48]; to provide a cooling effect by FMPs of Balidha village, Jessore district [50]; cuts and wounds (to stop bleeding) by FMPs of Vitbilia village in Pabna district [52]; cuts and wounds by FMPs of a village in Narayanganj district [55]; gastric troubles by a FMP of Gachabari village in Tangail district [56]; blood dysentery, blood coming out of anus by a FMP of Savar in Dhaka district [60]; bleeding from external cuts and wounds by TMPs of 15 clans of the Garo tribe of Madhupur, Tangail district [63]; gastric problems by the tribal healers of Oraon tribe of Sylhet district [67]; gastric problems by TMPs and FMPs practicing within a Khadia tribal community in Jaffargon area, Sylhet district [70]; to stop bleeding from cuts and wounds by the Marma tribe living in Naikhongchhari, Bandarban district [75]; stop bleeding from wounds, astringent, chest pain after eating, acidity, dysentery by the Tripura tribe residing in Chittagong Hill Tracts, Bangladesh [78]; cuts and wounds by FMPs of Badarganj and Shekhertek villages in Rangpur district [79]; to stop bleeding from cuts and wounds by FMPs of three villages in Sreepur Upazilla, Magura district [80]; bleeding from external cuts and wounds by TMPs of Naik clan of Rajbongshi tribe of Moulibazar district [84]; to stop bleeding from cuts and wounds by the Tripura tribe residing in Comilla district [90]; cuts, wounds, stomach ache by TMPs of the Hartsang clan of the Tripura tribe residing in Mirsharai area, Chittagong district [95]; bloating, stomach pain, helminthiasis, sprain, fracture by FMPs of Dhamrai sub-district, Dhaka district [97]; cuts and wounds, ulcer by FMPs of Barisal Town, Barisal district [98]; to stop bleeding from cuts and wounds by TMPs of the Bauri tribal community of Moulibazar district [102]; cuts and wounds, dengue fever by the Santal tribe residing in Thakurgaon district [111]; bleeding from external cuts and...
Table 7 Other reported ethnomedicinal uses of the plants in Bangladesh (Continued)

_Mimosa pudica_ L.

Gynecological problems, sex stimulant by the Garo tribe living in Netrakona district [19]; pain in body, head and teeth by FMPs of Sylhet Division, Bangladesh [41]; dental pain, gingivitis in Shitol Para village, Jhalokati district [42]; appetizer, spleen enlargement by FMPs of three villages in Natore and Rajshahi districts [43]; jaundice by FMPs of Daudkandi sub-district of Comilla district [44]; rheumatic pain by FMPs of Dinajpur district [45]; loss of urinary control by FMPs in villages by the Padma River of Rajshahi district [48]; to increase sexual power, to expedite delivery, piles, wounds, chronic dysentery, prevent decaying of gums, pus in ears by FMPs of Station Purbo Para village, Jamalpur district [33]; coughs, gall bladder disorders, hematemesis by FMPs of Shetabganj village, Dinajpur district [32]; tooth diseases by FMPs of six villages in Greater Naogaon district [53]; jaundice, skin diseases by FMPs of a village in Narayanganj district [55]; leg infections especially between the fingers, conjunctivitis, burning sensations in eyes, to expedite delivery by a FMP of Gachabari village in Tangail district [56]; passing of blood during urination, burning sensations in urinary tract by tribal medicinal practitioners (TMPs) of the Chakma tribe residing in Rangamati district [57]; to increase sexual strength, jaundice by TMPs of 15 clans of the Garo tribe of Madhupur, Tangail district [63]; impotency, appetizer, spleen enlargement by the tribal healers of Oraon tribe of Sylhet district [67]; piles by the TMPs of the Rai Clan of the Tipra tribe of Sylhet Division [68]; burning sensations in hands or feet by TMPs of two Murma tribal communities in two villages of Khagrachhari district [69]; burning sensations in hands or feet by a Pahan TMP in Dinajpur district [71]; eczema, scabies, abscesses by the Marma tribe living in Naikhongchhari, Bandarban district [75]; impotency, aphrodisiac, coughs, gall bladder problems, vaginitis by FMPs of two villages in Bagerhat district [88]; problems during childbirth by a FMP practicing among tea garden workers in Sreemangal, Maulvibazar district [92]; jaundice by folk herbalists in Comilla district [94]; rheumatism, insect repellent by TMPs of the Soren clan of the Santal tribe in Rajshahi district [104]; to expedite delivery by a FMP of Sreemangal Upazila in Maulvibazar district [105]; plague, edema, elephantiasis, epilepsy by Christians living in Mirzapur village of Dinajpur district, Bangladesh [108]; diarrhea, hypertension, antidote to poison by FMPs of Boalia sub-district, Rajshahi district [109]; swelling due to injury by TMPs of the Sigibe clan of the Khumi tribe of Tanach sub-district in Bandarban district [113]; blood purifier, skin infections by a FMP of Jamalpur district [116].

_Moringa oleifera_ Lam.

Diabetes by the Garo tribe living in Netrakona district [19]; body pain and fever in two villages of Rajshahi district [38]; helminthiasis in Vasu Bihar village, Bogra district [39]; sex stimulant, headache, coughs, mucus by FMPs of Sylhet Division, Bangladesh [41]; appetite stimulant, carminative, heart disorders, rheumatic fever, paralysis, liver pain, to increase bile secretion, sex stimulant, contraceptive in Shitol Para village, Jhalokati district [42]; hypertention, rheumatoid arthritis, leprosy, conjunctivitis, pain by FMPs of three villages in Natore and Rajshahi districts [43]; sterility by FMPs of Daudkandi sub-district of Comilla district [44]; chicken pox, body pain by FMPs of Dinajpur district [45]; nasal catarrh, decreased eyesight, bone fracture, sores by the Garo tribe inhabiting the Madhupur forest region of Bangladesh [46]; contraceptive, gout by FMPs in villages by the Padma River of Rajshahi district [48]; helminthiasis by FMPs of Vasu Bihar village, Bogra district [49]; rheumatism, ear disease, headache by FMPs of Balidha village, Jessore district [50]; diabetes, acidity, hypertension by FMPs of Station Purbo Para village, Jamalpur district [53]; paralysis, body pain by FMPs of six villages in Greater Naogaon district [53]; hypertension, swelling of gums, malnutrition by FMPs of three villages in Kurigram district [58]; constipation, liver problems, joint pain by a FMP of Savar in Dhaka district [60]; indigestion by FMPs of four villages in Natore and Rajshahi districts [61]; body pain, fever by FMPs of two villages in Rajshahi district [70]; piles by FMPs of three areas in Pirojpur district [74]; to stimulate appetite, roughness of skin, to increase sperm, helminthiasis, obesity, coughs, restless feeling, bloating, swelling due to injury, formation of blood clots on skin, good for eyes, goiter, pain, headache by FMPs of three villages in Shreepur Upazilla, Magura district [80]; hepatitis, jaundice by FMPs of several areas of Faridpur and Rajbari districts [83]; to break water during childbirth, diabetes by FMPs of Rai Kshatriya tribe of Pabna district [85]; to increase appetite, roughness of skin, pain, to increase sperm, acne, helminthiasis, obesity, coughs, restless feeling, bloating, swelling due to injury, formation of blood clots on skin, goiter, good for eyes, headache by FMPs of two villages in Bagerhat district [88]; rheumatic pain by a Garo TMP practicing among Garo and Kushe tribes in Sherpur district; tumor by a Chakma TMP practicing among Garo and Kushe tribes in Sherpur district [93]; joint pain, weakness by TMPs of the
Other reported ethnomedicinal uses of the plants in Bangladesh (Continued)

**Musa paradisiaca** L.

Anemia, hematemesis, debility, dysentery by FMPs of Sylhet Division, Bangladesh [41]; excessive bleeding during childbirth by FMPs of three villages in Kurigram district [58]; eczema by a FMP of Savar in Dhaka district [60]; chronic dysentery by FMPs of three areas in Pirojpur district [74]; fever with shivering, waist pain, insanity by FMPs of several areas of Faridpur and Rajbari districts [83]; dysentery by FMPs of Barisal Town, Barisal district [38].

**Nyctanthes arbor-tristis** L.

Constipation in children, fever by the Garo tribe living in Netrakona district [19]; liver disorders in Faridpur district [40]; arthritis, malaria, expectorant in Shitol Para village, Jhalokati district [42]; fever by FMPs of Daudkandi sub-district of Comilla district [44]; fever, rheumatism, mucus by FMPs of Noakhali district, coughs, fever by FMPs of Feni district [47]; cough by FMPs of Balidha village, Jessore district [50]; rheumatism, pitto-jor (fever due to metabolic disorders) by FMPs of Daulatdia Ghat, Kushtha district [51]; skin diseases by tribal medicinal practitioners (TMPs) of the Chakma tribe residing in Rangamati district [57]; fever including dengue and malarial fever, helminthiasis by a FMP of Savar in Dhaka district [60]; bilious fever, fever by TMPs of 15 clans of the Garo tribe of Madhupur, Tangail district [63]; stomach pain by FMP from Jhenaidah district [66]; hair loss, helminthiasis by the TMPs of the Rai Clan of the Tipra tribe of Sylhet Division [68]; liver disorders by a FMP of a village in Faridpur district [40]; malaria, helminthiasis by FMPs of three areas in Pirojpur district [74]; pitto-jor (fever due to metabolic imbalances in body), fever by FMPs of Tetrasta and Bhaba villages in Tangail district [81]; bitter, rheumatism, tuberculosis, fever by FMPs of three villages in Sreepur Upazilla, Magura district [80]; chronic fever by FMPs of three villages in Kurigram district [84]; fever by TMPs of the Pankho tribe of Bilaichari Union, Rangamati district [86]; bitter, tuberculosis, rheumatism, fever by FMPs of two villages in Bagerhat district [88]; fever by FMPs of Barisal Town, Barisal district [38]; migraine by Christians living in Mirzapur village of Dinajpur district, Bangladesh [108].

**Ocimum tenuiflorum** L.

Cough, fever, bronchitis, diabetes, indigestion by the Garo tribe living in Netrakona district [19]; cold in two villages of Rajshahi district [38]; fever in Vasu Bihar village, Bogra district [39]; coughs, asthma, respiratory difficulties, mucus, leucorrhoea by FMPs of Dinajpur district [45]; coughs, mucus, asthma by FMPs of Noakhali district [47]; fever by FMPs of Vasu Bihar village, Bogra district [49]; cough, mucus, asthma by FMPs of Station Purbo Para village, Jamalpur district [33]; contraceptive, immunity enhancer by FMPs of Daulatdia Ghat, Kushtha district [51]; coughs, cold, fever by FMPs of Vitibilla village in Feni district [52]; moho (endocrinological disorders, diabetes), cough by FMPs of six villages in Greater Naogaon district [53]; cold, skin disease, toothache by FMPs of seven villages in Ishwardi Upazilla, Pabna district [54]; mucus, cough, respiratory difficulties, sudden fits of vomiting, fever, headache by a FMP of Gachabari village in Tangail district [56]; coughs, respiratory difficulties, fever, diabetes, skin diseases by tribal medicinal practitioners (TMPs) of the Chakma tribe residing in Rangamati district [57]; asthma, tuberculosis, coughs, mucus, itching by FMPs of three villages in Kurigram district [58]; cold, cough, bronchitis, pneumonia by FMPs of four villages in Nature and Rajshahi districts [61]; mucus, coughs by TMPs of 15 clans of the Garo tribe of Madhupur, Tangail district [63]; coughs, mucus, respiratory difficulties by FMPs of Bhola district [64]; allergy by a FMP of Jhalokathi in Barisal district [65]; coughs by the tribal healers of Gor tribe of Sylhet district [67]; coughs by TMPs of two Marma tribal communities in two villages of Khagrachhari district [69]; coughs in children, hoarseness of voice by a Pahan TMP in Dinajpur district [71]; coughs by FMPs and TMPs in the vicinity of Lawachara Forest Reserve, Moulvibazar district [72]; dry cough by FMPs of three areas in Pirojpur district [74]; feeling of restlessness, excessive sexual desire, burning sensations in body especially in palms of hands or soles of feet, increases bile secretion, leprosy, less urination, blood purifier, piles, coughs, carminative by FMPs of three villages in Sreepur Upazilla, Magura district [80]; respiratory difficulties in children due to catarrhal cold by TMPs of Bongshi tribe in Tangail district [82]; if infant does not drink milk or cries incessantly by TMPs of the Pankho tribe of Bilaichari Union, Rangamati district [86]; coughs by TMPs of the Tripura tribe residing in Comilla district [90]; if infant refuses to take milk from nursing mother and cries incessantly by a Tonchongya tribal healer of Rangamati district [91]; fever by a Chakma tribal practitioner practicing among Garo and Kush tribes in Sherpur district; rheumatic problems, gastric problems by a Kush tribal practitioner practicing among Garo and Kush tribes in Sherpur district [93]; coughs, acne by folk herbalists

Table 7 Other reported ethnomedicinal uses of the plants in Bangladesh (Continued)
in Comilla district [94]; fever, loss of appetite by TMPs of the Nag clan of the Rai
Ghatual tribe in Moulibazar district [96]; coughs, mucus by FMPs of Dhamrai
sub-district, Dhaka district [97]; coughs, cold by TMPs of Tonchongya tribe of
Roangchaari Upazila in Bandarban district [99]; coughs by TMPs of the Manipuri
tribe in Kamalganj Upazila, Moulibazar district [101]; asthma by TMPs of the Bauri
tribal community of Moulibazar district [102]; cold by a FMP of Seemangal
Upazila in Maulibazar district [105]; coughs, mucus by the Teli clan of the
Telegu tribe of Maulibazar district [100]; bronchitis, liver diseases, cancer by FMPs
of Boalia sub-district, Rajshahi district [109]; malaria, erectile dysfunction, coughs,
colds by FMPs of Bheramara area in Kushtia district [110]; coughs, mucus, uneasy
feeling in the body by the Santal tribe residing in Thakurgaon district [111].

Phoenix sylvestris (L.) Roxb.

To expedite delivery in pregnant women by FMPs of six villages in Greater Naogaon
district [53]; helminthiasis, biliary problems, diuretic, acne by TMPs of Santal tribe
of Rangpur district [107].

Piper betel Blanco

Bronchitis, antidote to poison, indigestion by the Garo tribe living in Netrakona
district [19]; to remove head lice, boils by FMPs of Sylhet Division, Bangladesh [41];
swelling of hand, leg, nose or skin, flatulence or dyspepsia, aphrodisiac in Shitol
Para village, Jhalokati district [42]; stomach disorders by FMPs of Station Purbo Para
village, Jamalpur district [33]; tuberculosis, coughs, meho (endocrino logical disorders,
diabetes) by FMPs of six villages in Greater Naogaon district [53]; external cuts and
wounds; minor infections by a FMP of Gachabari village in Tangail district [56];
cough, coryza, constipation by a FMP of Savar in Dhaka district [60]; digestive, to remove foul
odor from mouth, constipation by FMPs of Bholai district [64]; headache by a FMP
of Jhalokathi in Barisal district [65]; gastric problems, piles by FMPs of Chaudanga
district [66]; stomach pain in expecting mother by FMP from Jhenaidah district
[66]; respiratory difficulties in children by the TMPs of the Rai Clan of the Tipra
tribe of Sylhet Division [68]; cold, small size of penis, fever, penile disorders by
FMPs of two villages in Rajshahi district [70]; energy enhancer by FMPs of three
areas in Pirojpur district [74]; lesions on the face by FMPs of several areas of
Faridpur and Rajbari districts [83]; to increase memory, premature ejaculation by
FMPs of two villages in Bagerhat district [88]; sex stimulant, to stop bleeding by
FMPs of Dhamrai sub-district, Dhaka district [97]; cuts and wounds, helminthiasis
by TMPs of the Manipuri tribe in Kamalganj Upazila, Moulibazar district [101];
being touched by ‘evil wind’ by TMPs of the Soren clan of the Santal tribe in
Rajshahi district [104]; to stop bleeding from external cuts and wounds by a FMP
of Seemangal Upazila in Maulibazar district [105]; toothache by a FMP of Jamalpur
district [106].

Psidium guajava L.

Toothache, acne, diabetes by the Garo tribe living in Netrakona district [19];
toothache, diarrhea by FMPs of Sylhet Division, Bangladesh [41]; dental pain,
gingivitis, scabies in Shitol Para village, Jhalokati district [42]; piles by FMPs of
Daudkandi sub-district of Comilla district [44]; gastric problems, cuts and wounds
by FMPs of Balidha village, Jessore district [50]; dysentery by FMPs of a village in
Narayanganj district [53]; flatulence, gastrointestinal disorders by tribal medicinal
practitioners (TMPs) of the Chakma tribe residing in Rangamati district [57];
dysentery, purerpal fever by FMPs of three villages in Kurigram district [58]; oral
hygiene by FMPs of four villages in Natore and Rajshahi districts [61]; toothache,
diarrhea by the tribal healers of Oraon tribe of Sylhet district [67]; toothache by
TMPs of two Marma tribal communities in two villages of Khagrachhari district
[69]; toothache by a Pahan TMP in Dinajpur district [71]; dysentery, anorexia by
FMPs of three areas in Pirojpur district [74]; dysentery, coughs, mucus, cold, cold,
wounds, respiratory problem, maintain texture of skin, maintain normal heart
condition by the Rakhain tribe inhabiting the Chittagong Hill Tracts region [76];
diarrhea, debility by FMPs of Terbaria and Bubla villages in Tangail district [81];
dysentery by FMPs in villages by the Padma River of Rajshahi district [82]; to
increase strength and sperm count, and appetite, fever, nutritive, piles by
FMPs of two villages in Bagerhat district [88]; tooth infections, loss of appetite by a
TMP of the Deb barma clan of the Tripura tribe of Moulibazar district [103];
diabetes, toothache, carminative by TMPs of Santal tribe of Rangpur district [107].

Punica granatum L.

Fungal infection of the nail by the Garo tribe living in Netrakona district [19]; piles
in Vasu Bihari village, Bogra district [39]; diarrhea, to increase strength by FMPs of
Sylhet Division, Bangladesh [41]; menorrhagia, constipation, dysentery in Shitol
Para village, Jhalokati district [42]; dysentery by FMPs of Daudkandi sub-district of
Comilla district [44]; dysentery by the Garo tribe inhabiting the Madhupur forest
region of Bangladesh [46]; helminthiasis, dysentery by FMPs in villages by the
Ghaghot River of Rangpur district [48]; piles by FMPs of Vasu Bihari village, Bogra
district [49]; blood dysentery by FMPs of Balidha village, Jessore district [50];
inflammation of nails in hand or leg, dysentery, blood dysentery, loss of appetite,
Table 7 Other reported ethnomedicinal uses of the plants in Bangladesh (Continued)

| Scoparia dulcis L. | Weakness due to anemia in two villages of Rajshahi district [38]; sexual diseases, nerve disorders by FMPs of Sylhet Division, Bangladesh [41]; gall bladder stones by FMPs of Dinajpur district [45]; dysentery by the Garo tribe inhabiting the Madhupur forest region of Bangladesh [46]; diabetes, cuts and wounds, gastric ulcer, weakness, fever, coughs, bronchitis, diarrhoea, dysentery, edema, toothache, jaundice, diabetes by FMPs of Noakhali district [47]; infertility in male or female, leucorrhrea, malaria, dog bite, debility, piles by FMPs in villages by the Bangal River of Bogra district [48]; debility, premature ejaculation, low sperm count by FMPs in villages by the Padma River of Rajshahi district [48]; diabetes by FMPs of Station Purbo Para village, Jamalpur district [33]; burning sensations during urination, severe fever, meho by FMPs of six villages in Greater Naogaon district [53]; gastric ulcer, anemia by FMPs of seven villages in Ishwardi Upazilla, Pabna district [54]; pain in chin or throat, tonsillitis, throat cancer, facial redness, eczema, skin diseases by tribal medicinal practitioners (TMPs) of the Chakma tribe residing in Rangamati district [57]; meho (endocrinological disorder) by FMPs of three villages in Kurigram district [58]; gastric problems, dysentery, diabetes by a FMP of Savar in Dhaka district [60]; diarrhoea by FMPs of Chuadanga district [66]; dysentery by FMP from Jhenaidah district [66]; fever, cold, coughs by TMPs of two Marma tribal communities in two villages of Khagrachhari district [69]; vomiting tendency by TMPs and FMPs practicing within a Khadia tribal community in Jallong area, Sylhet district [70]; body ache, gastric ulcer by FMPs of three areas in Pirojpur district [74]; respiratory problems and loss of appetite in children by the Marma tribe living in Naikhongchhari, Bandarban district [75]; blood dysentery by the Santal tribe residing in Rajshahi district [77]; continuous hiccups by FMPs of Badarganj and Shershertek villages in Rangpur district [79]; urinary problems by FMPs of Terbaria and Bhabla villages in Tangail district [81]; diarrhoea in children by TMPs of Bonshi tribe in Tangail district [82]; jaundice by FMPs of Rai Khatriya tribe of Pabna district [85]; spermatorrhoea by TMPs of the Panikho tribe of Bilachari Union, Rangamati district [86]; physical weakness, dysentery by TMPs of the Murmu tribal community residing in Rajshahi district [87]; stomach pain in infants by a FMP practicing among tea garden workers in Sreemangal, Maulvi bazar district [92]; cough in children, diarrhoea by TMPs of the Habang clan of the Tripura tribe of Mishcharai area, Chittagong district [95]; diabetes by FMPs of Dhamrai sub-district, Dhaka district [97]; dysentery in children by FMPs of Barisal Town, Barisal district [98]; snake bite, insect bite, antitode to poison by TMPs of Tonchongya tribe of Roangchhari Upazila in Bandarban district [99]; swelling of fingers by TMPs of Chakma tribe of Rangapanchara Area in Khagrachhari district [34]; dysentery in children by TMPs of the Manuipuri tribe in Kamalganj Upazila, Moulibazar district [101]; diabetes by the Santal tribe residing in Thakurgaon district [111]; constipation in Paikgacha sub-district of Khulna district, diarrhoea, colic in Rampal sub-district of Bagerhat district [113].

| Sesamum indicum L. | Skin diseases, gastrointestinal disorders by FMPs of Sylhet Division, Bangladesh [41]; to enhance digestion by FMPs of three areas in Pirojpur district [47]; piles by FMPs of Chuadanga district [66]; blood dysentery by the TMPs of the Rai Clan of the Tipra tribe of Sylhet Division [68]; wounds, otitis, otalgia by TMPs of Tonchongya tribe of Roangchhari Upazila in Bandarban district [99].

| Spondias pinnata (L.f.) Kurz. | Appendicitis by FMPs of two villages in Rajshahi district [38]; gastrointestinal disorders, gastric problems by FMPs of Sylhet Division, Bangladesh [41]; bone disease in cattle in Shitol Para village, Jalalakati district [42]; dysuria, dysentery by the Garo tribe inhabiting the Madhupur forest region of Bangladesh [46]; fever,

| Streblus asper Lour. | Appendicitis by FMPs of two villages in Rajshahi district [38]; gastrointestinal disorders, gastric problems by FMPs of Sylhet Division, Bangladesh [41]; bone disease in cattle in Shitol Para village, Jalalakati district [42]; dysuria, dysentery by the Garo tribe inhabiting the Madhupur forest region of Bangladesh [46]; fever,
Table 7 Other reported ethnomedicinal uses of the plants in Bangladesh (Continued)

| Plant                   | Uses and Conditions                                                                 |
|-------------------------|--------------------------------------------------------------------------------------|
| *Syzygium aromaticum*   | Coughs, debility, to increase mental strength by FMPs of Dinajpur district [45];  |
| (L.) Merr. & L.M. Perry | coughs, mucus by FMPs of Station Purbo Para village, Jamalpur district [33]; low   |
|                         | semen volume, low sperm density by a FMP of Jhalokati in Barisal district [63];    |
|                         | infertility in women by FMPs of Chudanga district [66]; dry cough, stomach pain     |
|                         | by the TMPs of the Rai Clan of the Tipra tribe of Sylhet Division [68]; coughs by   |
|                         | the Tipra tribe residing in Comilla district [90]; to strengthen stomach by a FMP  |
|                         | of Jamalpur district [106].                                                        |
| *Syzygium cumini*       | Diabetes by the Garo tribe living in Netrakona district [19]; dysentery, debility,  |
| (L.) Skeels             | anti-emetic, diabetes by FMPs of Sylhet Division, Bangladesh [41]; diabetes in Shitol |
|                         | Para village, Jhalokati district [42]; tonic, diabetes by FMPs of three villages   |
|                         | in Natore and Rajshahi districts [43]; anemia by FMPs in villages by the Ghaghot   |
|                         | River of Rangpur district [48]; diabetes by FMPs of Balidha village, Jessore district [50]; tooth infection, dysentery, diabetes, stone in kidney or penis by FMPs of Station Purbo Para village, Jamalpur district [33]; diabetes by FMPs of six villages in Greater Naogaon district [53]; diabetes by FMPs of seven villages in Ishwardi Upazilla, Pabna district [54]; diabetes, chronic dysentery by FMPs of three villages in Kurigram district [58]; swelling of abdomen, pain in navel by TMPs of 15 clans of the Garo tribe of Madhupur, Tangail district [63]; loss of appetite, constipation, hemolytic infections by FMPs of Bhola district [64]; diabetes by FMPs of three areas in Pirojpur district [74]; diabetes and urinary problems by the Marma tribe living in Naikhongchhari, Bandarban district [75]; inflammation, infrequent urination, burning sensation in urinary tract, fever, gastrointestinal problems, diarrhoea, blood with stool, toothache, skin disorders by the Rakhain tribe inhabiting the Chittagong Hill Tracts region [76]; low semen density by FMPs of Badarganj and Shekhertek villages in Rangpur district [79]; diabetes by FMPs of several areas of Faridpur and Rajbari districts [83]; coughs, burning sensations in the body, gall bladder problems, anemia, anti-infective by FMPs of two villages in Bagerhat district [88]; diabetes by a Chakma tribal practitioner practicing among Garo and Kush tribes in Sherpur district, [93]; suffering from urination or urinary pressure during taking a bath by FMPs of Barisal Town, Barisal district [98]; diabetes, dermatitis by TMPs of Santal tribe of Rangpur district [107]; digestive aid, rheumatoid arthritis by FMPs of Bheramara area in Kushtia district [110]; diabetes by the Santal tribe residing in Thakurgaon district [111]; hepatitis, diabetes, appetite, burn, anemia, bloating, injury by FMPs of two villages by the Rupsha River in Bagerhat district [120]. |
| *Tamarindus indica*     | Fever, to stop vomiting, asthma by the Garo tribe living in Netrakona district [19]; |
| L.                     | diabetes and fever in Vasu Bihar village, Bogra district [39]; spleen problems, to  |
|                         | reduce obesity by FMPs of Sylhet Division, Bangladesh [41]; bleeding due to piles  |
|                         | in Shitol Para village, Jhalokati district [42]; diabetes, fever by FMPs of Vasu   |
|                         | Bihar village, Bogra district [49]; eye diseases, cataract, rheumatism, dysentery  |
|                         | by FMPs.                                                                           |
Other reported ethnomedicinal uses of the plants in Bangladesh (Continued)

| Plant | Use |
|-------|-----|
| Terminalia arjuna (Roxb. ex DC.), Wight & Arn. | Heart disease, dysentery, diarrhea, jaundice by the Garo tribe living in Netrakona district; heart disorders, to get protection from evil doings by FMPs of two villages in Rajshahi district; cardiovascular disorders, appetite stimulant by FMPs of Sylhet Division, Bangladesh; cardiovascular diseases, cholera, blood dysentery, piles with bleeding in Shitoli Para village, Jhalokati district; leucorhea, rheumatoid arthritis, infertility, weakness by FMPs of three villages in Natore and Rajshahi districts; sex stimulant, heart diseases by FMPs of Daulkandi sub-district of Comilla district; heart diseases, rheumatism by FMPs of Dinajpur district; erectile dysfunction by FMPs in villages by the Padma River of Rajshahi district; heart disorders, indigestion, dysentery by FMPs of Balidha village in Tangail district; to increase sexual power, cough, asthma, heart disorder, dysentery by FMPs of Station Burpo Para village, Jamalpur district; heart diseases by FMPs of Daulatdia Ghat, Kushtia district; respiratory problems, cough, fever, debility, hypotension by FMPs of six villages in Greater Naogaon district; heart disease, bone fracture by FMPs of seven villages in Ishwardi Upazilla, Pabna district; dysentery, flatulence, stomach pain, indigestion by a FMP of Gachabari village in Tangail district; heart disease, pain in heart, blood coming from mouth, chronic dysentery by FMPs of three villages in Kurigram district; heart disorders, hepatitis, kidney problems, passing of semen with urine by FMPs of several areas of Faridpur and Rajbari districts; stomach and heart disorders, graying of hair by FMPs of Goala tribe of Moulvibazar district; diabetes, anorexia, insect repellent by TMPs of Santal tribe of Rangpur district; diabetes, appetite, jaundice, eczema, conjunctivitis by FMPs of Boaala sub-district, Rajshahi district; syphilis, infections within the penis, difficulties in urination, burning sensations during urination by FMPs of Bheramara area in Kushtia district; gastritis, indigestion in Rampal sub-district of Bagerhat district; anemia by TMPs of Mro community of Gazalia Union in Bandarban district. |

Table 7 Other reported ethnomedicinal uses of the plants in Bangladesh (Continued)
Table 7 Other reported ethnomedicinal uses of the plants in Bangladesh (Continued)

| Plant Name                  | Uses                                                                 |
|-----------------------------|----------------------------------------------------------------------|
| Terminalia belerica (Gaertn.) Roxb. | Coughs, to increase strength, appetite stimulant, to increase eye sight by FMPs of Sylhet Division, Bangladesh [41]; stimulant, impotency by FMPs of three villages in Natore and Rajshahi districts [43]; impotency, coughs, indigestion by FMPs of Dinaipur district [45]; toxic, diarhea, dysentery, coughs, breathing problems, hair tonic, joint pain by FMPs of Noakhali district [47]; asthma, allergy, to maintain heart, lungs and liver in good condition by FMPs of Station Purbo Para village, Jamalpur district [33]; to cure any disease by FMPs of Vitbilia village in Pabna district [52]; blood purifier, appetite stimulant by FMPs of six villages in Greater Naoaon district [53]; stomach disorders, flatulence, indigestion by a FMP of Gachabari village in Tangail district [56]; abscess, burning sensations on skin, haemorrhoids by tribal medicinal practitioners (TMPs) of the Chakma tribe residing in Rangamati district [57]; coughs, spleen disorders, to clear bowels, flatulence, dysentery by FMPs of three villages in Kurigram district [58]; helminthiasis, loss of hair by the tribal healers of Oron tribe of Sylhet district [67]; jaundice by TMPs of two Marma tribal communities in two villages of Khagrachhari district [69]; diabetes by a Pahan TMP in Dinaipur district [71]; to keep healthy by FMPs of three areas in Pirojur district [74]; long-term fever, loss of appetite, sex stimulant by the Tripura tribe residing in Khagrachhari district; Hill Tracts, Bangladesh [78]; to increase libido, acidity by FMPs of Badarganj and Shekhertek villages in Rangpur district [79]; astringent, coughs, biliary disorders, good for eyes and hair, helminthiasis, breaking down of voice, thirst, vomiting tendency, rheumatism by FMPs of three villages in Sreepur Upazilla, Magura district [80]; gastric problems by FMPs of several areas of Faridpur and Rajbari districts [83]; constipation by FMPs of Goala tribe of Moulibazar district [59]; anemia by FMPs of the Pankho tribe of Bilaichari Union, Rangamati district [86]; blood purifier by a FMP practicing among tea garden workers in Sreemangal, Moulibazar district [92]; dysentery, blood dysentery, irritable bowel syndrome, gastric problems, indigestion by a Chakma tribal practitioner practicing among Garo and Kush tribes in Sylhet district; constipation by a Kush TMP practicing among Garo and Kush tribes in Sholpur district [93]; cough, mucus, asthma by TMPs of the Habong clan of the Tripura tribe of Mirsharai area, Chittagong district [95]; aphrodisiac, energizer, fever, body ache by TMPs of Tonchongya tribe of Roangchchara Upazila in Bandarban district [99]; fever with shivering, asthma by FMPs of the Bauri tribal community of Moulibazar district [102]; bleeding from gums, loss of appetite, headache, paralysis by a TMP of the Deb barma clan of the Tripura tribe of Moulibazar district [103]; skin diseases, physical weakness by a FMP of Sreemangal Upazila in Moulibazar district [105]; constipation, sexual diseases by FMPs of Boalia sub-district, Rajshahi district [109]; erectile dysfunction by FMPs of Bheramara area in Kushia district [110]; diabetes, low density of semen, kidney problems, cardiovascular disorders, weakness of heart, hysteria, osteoporosis by a TMP of the Sardar (Dhangor) community in Chuadanga district [116]; heart disorders, fluttering of heart by TMPs of the Tripura tribe residing in Comilla district [98]; any type of heart disorders by TMPs of the Harbang clan of the Tripura tribe of Mirsharai area, Chittagong district [95]; burning sensation during urination, hypertension, asthma by folk herbalists in Comilla district [94]; abnormal rhythms of heart by FMPs of Barisal Town, Barisal district [98]; sex stimulant by TMPs of Chakma tribe of Rangapanar Chara Area in Khagrachhari district [34]; heart diseases by TMPs of the Manipuri tribe in Kamalganj Upazila, Moulibazar district [101]; cardiovascular disorders, whishful discharge during urination, burning sensations during urination, puerperal fever by TMPs of the Bauri tribal community of Moulibazar district [102]; chest pain due to heart disorders, burning sensations during urination, bone fracture by a TMP of the Deb barma clan of the Tripura tribe of Moulibazar district [103]; knee and waist pain by TMPs of the Soren clan of the Santal tribe in Rajshahi district [104]; heart disorders, watery eyes by a FMP of Sreemangal Upazila in Maulvibazar district [105]; pain due to injury, diabetes by a FMP of Jamalpur district [106]; hypertension, anemia, leprosy by FMPs of Boalia sub-district, Rajshahi district [109]; depression on both sides of the head and chest and appearance of yellow color in palm of hands and eyes by TMPs of the Hodi tribe in Sherpur district [112]; osteoporosis by a TMP of the Sardar (Dhangor) community in Chuadanga district [116]; heart disease, gynaecological disorders, central nervous system stimulant, leprosy, gonornhea by FMPs of two villages by the Rupsha River in Bagerhat district [120]. |

Terminalia chebula Retz. | Digestive aid, quenches thirst, blood dysentery, bloating, constipation by FMPs of Sylhet Division, Bangladesh [41]; constipation, nausea in Shitol Para village, Jhalokati district [42]; infections, indigestion by FMPs of three villages in Natore and Rajshahi districts [43]; purgative, cough relief by FMPs of Daumkandi sub-district of Comilla district [44]; bacterial diseases by FMPs of Dinajpur district [45]; stomachic by the Garo tribe inhabiting the Madhupur forest region of Bangladesh [46]; jaundice by FMPs in villages by the Ghaqhot River of Rangpur district [48]; bloating, gastrointestinal disorders, stomach ache, heart disorders, debility, helminthiasis by |
Table 7 Other reported ethnomedicinal uses of the plants in Bangladesh (Continued)

| Plant                     | Uses                                                                 |
|---------------------------|----------------------------------------------------------------------|
| Zingiber officinale Rosae | Coughs, to reduce vomiting, gastric problems by the Garo tribe living in Netrakona district [195]; edema, asthma, chest diseases and vomiting tendency in two villages in Rajshahi district [38]; throat pain, loss of appetite, to aid digestion, dysentery by FMPs of a village in Narayanganj district [55]; fever including dengue and malarial fever, abscess, common cold by a FMP of Savar in Dhaka district [60]; sudden sense of fear by FMPs of 15 clans of the Garo tribe of Madhupur, Tangail district [63]; haemorrhoids, blood dysentery, headache by a FMP of Jhalokathi in Barisal district [65]; bone fracture by FMPs of two villages in Natore district [31]; allergy in humans and domestic animals, infertility in women by FMPs of Chuadanga district [66]; puerperal fever, scabies by the FMPs of the Rai Clan of the Tipra tribe of Sylhet Division [68]; dysentery by a Pahan TMP in Dinajpur district [71]; arthritis, gout by FMPs of three areas in Pirojpur district [74]; vomiting tendency, fever by FMPs of Bongshi tribe in Tangail district [82]; orchitis in men, infertility in women, jaundice, rheumatic pain, passing of semen with urine and asthma in humans, bloating and foot and mouth disease in cattle by FMPs of several areas of Faridpur and Rajbari districts [83]; rheumatic pain by FMPs of Naik clan of Rajbongshi tribe of Moulibazar district [84]; puerperal fever by FMPs of the Murmu tribal community residing in Rajshahi district [87]; bone fracture by FMPs of the Khatiya and Khashya clans of the Bagdi tribe in Rajbari district [89]; coughs, helminthiasis by FMPs of the Tripura tribe residing in Comilla district [90]; pain in leg by a FMP practicing among tea garden workers in Sreemangal, Moulibazar district [92]; sexual weakness by a Chakma TMP practicing among Garo and Kush tribes in Sherpur district [93]; dog bite, bone fracture by folk herbalists in Comilla district [94]; to strengthen stomach, to increase sperm count and sperm density by a FMP of Jamalpur district [106]; debility, digestive aid by FMPs of Bheramara area in Kushtia district [110]; infertility with seizures by FMPs of the Hodri tribe in Sherpur district [112]; skin ulcer, gout, pain, infections, burns by FMPs of Khasia tribe in several sub-districts in Sylhet district [117]. |
using medicinal plants to cure various diseases can provide a modern day scientist with important research material and ideas to conduct relevant disease-alleviating research.

Conclusion

The three communities, namely Garo, Hajong and Bangalee of Garo Hills heavily depend on the ethnopharmacological remedies for primary health care, especially fever, cold, coughs, headache, body pain, diarrhea, dysentery, constipation, indigestion, wounds, boils, skin diseases, helminthiasis, and urinary troubles. One of the important finding from this study reveals that the THPs never considered the importance of the preservation and documentation of their knowledge. The focus group discussion and personal interviews reflects the reluctance of the young generation towards their native ethnobotanical practice. The present study provides an overview of the medicinal plant usage in Durgapur Garo Hills area. The current investigation identified a total of 71 plant species used for 82 different ailments, which can be further subdivided in 16 major ailment categories. Extensive use of plants to manage dermatological (25 species) and gastrointestinal disorders (36 species) signifies that these two diseases are quite widespread in the study area. Unplanned urbanisation is adversely affecting the natural habitat of numerous plant species with important medicinal values. Inclination towards modernisation is creating a negative attitude towards the age old practice of ethnobotanical medicine, whereas, prescribing allopathic medicine by non-professionals is putting the health system at risk. Our present investigation created positive impact especially on the local people who expressed their interest after learning the fact that there is sufficient scientific basis of the healing power of the plants. This will help in developing public awareness towards the conservation of the traditional knowledge as well as to preserve the plant diversity for the future generation. This is a necessity because a number of uses of plant species for medicinal purposes are unique to this study and may contribute to further research and development of novel drugs.

Competing interests

The authors declare that they have no competing interests.

Authors’ contributions

MAK performed the field work and carried out the survey. MAK and MKI designed the study, analyzed the data and drafted the manuscript. MKI, MAS, SS, AKB, KA, MMR, JAS, and RJ, EI and MR analyzed the data and re-wrote the draft manuscript. All authors read and approved the final manuscript.

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