Medicinal Plants of a Folk Herbalist in Tangail District, Bangladesh

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ABSTRACT

Folk medicine is widely practiced in Bangladesh and the folk medicinal practitioners consist of a varied group, which includes both full-time and part-time practitioners. Folk medicine is also practiced in villages, usually by an elderly woman, who has gained knowledge on the use of medicinal plants through life time experience and knowledge gained from the previous generation. The objective of this study was to document the medicinal plants and formulations used by an elderly woman folk herbalist of Tangail district in Bangladesh. Interviews were carried out with the help of a semi-structured questionnaire and the guided field-walk method. It was observed that the folk herbalist (FH) used a total of 33 plants distributed into 26 families in her formulations. The various diseases that she treated with her simple formulations included chicken pox, skin disorders, respiratory tract disorders, menstrual disorders, leucorrhrea, gastrointestinal tract disorders, tooth problems, malnutrition, head lice, pain, urinary tract disorders, diabetes, conjunctivitis, nose bleed, blurred vision, jaundice, bed wetting, fever, hypertension, helminthiasis, memory, anemia, and foul odor of sweat. Quite a number of the plants used by the FH were used in an uncommon manner in treating diseases not in accordance with usual folk medicinal practices. These plants therefore deserve scientific attention.

KEY WORDS
Folk medicine, Tangail, medicinal plants, Bangladesh

INTRODUCTION

Bangladesh is a country where folk medicinal practice is not only common but come in different forms like use of plants, animals, amulets, incantations and minerals by the folk medicinal practitioners. As such folk medicinal practice is done by a variety of practitioners including some who are full-time practitioners and by others who practice on a part-time basis. The latter group may include practically anybody who has derived his or her knowledge from books, from trials and errors, from dreams, from earlier generations or present day acquaintances or even Imams and priests of mosques or temples. A notable group of folk medicinal practitioners are elderly women in villages who have gathered their medicinal knowledge through various means including past generation or through trial and errors over a life time. It is not unusual to see such women rising early in the morning and traversing through the village collecting herbs and plant parts, which they dry or use fresh or in the form of decoctions, and later in the day dispense to persons seeking their advice.

It is important to have a database of the medicinal plants of the country not only to guide future scientific research but also for conservation of important plants, which are rapidly becoming endangered due to lack of such database. Towards that objective, we had been collecting information on both folk and tribal medicinal practices for a number of years [36,37-39,8,15,18,31,32,40-48,1,4-6,14,20,21,22,49,50,59,61,10,16,19,24,52-55,60,2,23,25,34,56,57,5,17,26,27,33,58]. The objective of the present study was to document the medicinal plants used by an elderly woman folk herbalist (FH) who practices in Tangail district of the country.
MATERIALS AND METHODS

The elderly woman was named Shamsunnahar and was 77 years old. She mentioned that she obtained her knowledge from earlier generational persons, particularly her maternal grandfather and from trials and errors. She practiced in College Para of Tangail district. Prior Informed Consent was first obtained from the FH. The FH was explained the full purpose of our visit and consent obtained to disseminate any information provided in both national and international venues. Actual interviews were conducted with the help of a semi-structured questionnaire and the guided field-walk method of Martin [29] and Maundu [30]. In this method, the FH took the interviewers on guided field-walks through areas from where she collected her medicinal plants, pointed out the plants, and described their uses. Plant specimens were photographed and collected on the spot, pressed, dried and brought back to Dhaka to be identified at the Bangladesh National Herbarium. Interviews were carried out in the Bengali language, which was spoken by both the FH and the interviewers. It was noted that the FH collected most of her plants from areas within the village.

RESULTS AND DISCUSSION

It was observed that the FH used a total of 33 plants distributed into 26 families in her practices. Plants or plant parts were used in simple forms like juice, decoction or paste, which were taken orally or advised to be used topically. The 33 plants were used to treat multiple disorders, which included chicken pox, skin disorders, respiratory tract disorders, menstrual disorders, leucorrhrea, gastrointestinal tract disorders, tooth problems, malnutrition, head lice, pain, urinary tract disorders, diabetes, conjunctivitis, nose bleed, blurred vision, jaundice, bed wetting, fever, hypertension, helminthiasis, memory, anemia, and foul odor of sweat. The results are shown in Table 1.

Table 1: Medicinal plants and formulations of the FH in Tangail district, Bangladesh.

<table>
<thead>
<tr>
<th>Serial Number</th>
<th>Scientific Name</th>
<th>Family Name</th>
<th>Local Name</th>
<th>Parts used</th>
<th>Ailments and mode of medicinal use</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Adhatoda vasica L.</td>
<td>Acanthaceae</td>
<td>Bashok</td>
<td>Leaf</td>
<td>To prevent chicken pox. Boiled leaves are orally taken with water. To brighten skin color. 2-3 drops of leaf juice is mixed with powdered conches and applied to body 2-3 hours before taking a bath.</td>
</tr>
<tr>
<td>2</td>
<td>Amaranthus spinosus L.</td>
<td>Amaranthaceae</td>
<td>Kanta khura, Notae shak</td>
<td>Root</td>
<td>Irregular menstruation. Roots are crushed in water in which rice has been washed. The water is strained, warmed and 3-4 teaspoonfuls of the water are orally taken for 2-4 days. Leucorrhrea. 2 teaspoons of root juice are mixed with 1 cup of water in which ‘atap’ rice has been washed and taken orally twice daily.</td>
</tr>
<tr>
<td>3</td>
<td>Mangifera indica L.</td>
<td>Anacardiaceae</td>
<td>Aam</td>
<td>Bark, leaf, gum</td>
<td>Dysentery, rumblings in the stomach, stomach pain. The upper layer of bark is scraped off followed by making a paste of the bark with cow milk. The paste is taken orally. Loss of teeth at young age. Young leaves are used to brush teeth. Cracking of leg skin. Gum is applied topically to affected areas. Blood dysentery. Half teaspoon of bark juice is taken with half poa (local measure, 4 poas approximate 1 kg) goat’s milk or alternately sugar or honey.</td>
</tr>
<tr>
<td>4</td>
<td>Annona squamosa L.</td>
<td>Annonaceae</td>
<td>Ata</td>
<td>Fruit, leaf</td>
<td>Malnutrition followed by health deterioration. 2-3 teaspoons of fruit juice is taken orally with milk. Head lice. Two teaspoons of leaf juice is mixed with 1-2 teaspoons of water and applied to head every 2-3 days. Note that pregnant women should not do this.</td>
</tr>
<tr>
<td>5</td>
<td>Areca catechu L.</td>
<td>Arecaceae</td>
<td>Supari</td>
<td>Nut, leaf</td>
<td>Severe skin infection. Nuts are dried along with skin, powdered and applied topically to affected areas. Rheumatic pain. Leaf juice is topically applied with oil.</td>
</tr>
<tr>
<td>6</td>
<td>Cocos nucifera L.</td>
<td>Arecaceae</td>
<td>Narikel</td>
<td>Fruit</td>
<td>Migraine. 10-12 grains of sugar are added to coconut water and taken through the nose in small amounts or applied through the nose with a dropper. Passing of sugar-like crystals with urine. Paste of 10g fruit pulp is mixed with yoghurt and...</td>
</tr>
<tr>
<td>No.</td>
<td>Plant Name</td>
<td>Family</td>
<td>Part Used</td>
<td>Condition</td>
<td>Treatment</td>
</tr>
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<tr>
<td>7</td>
<td><em>Phoenix dactylifera</em> L.</td>
<td>Arecales</td>
<td>Khejur</td>
<td>Fruit</td>
<td>Chronic bronchitis. 20-25g ripe fruits are boiled in 4 cups water till the volume of water reaches 1 poa. The water is then strained and taken orally twice daily. Whooping cough. 20-25g fruits are soaked in 2 cups of warm water overnight. The following morning, the fruits are crushed in the water followed by straining the juice, which is taken orally daily in the form of sherbet. Malnutrition in children. One quarter of ripe fruit is taken orally with cow milk.</td>
</tr>
<tr>
<td>8</td>
<td><em>Cannabis sativa</em> L.</td>
<td>Cannabaceae</td>
<td>Bhang</td>
<td>Leaf</td>
<td>To expedite delivery. Leaves are fried in ghee and powdered and then orally taken with warm water.</td>
</tr>
<tr>
<td>9</td>
<td><em>Carica papaya</em> L.</td>
<td>Caricaceae</td>
<td>Pepe</td>
<td>Fruit, seed, sap</td>
<td>Bloating. Several pieces of ripe fruit is taken orally with a little salt and black pepper. Stoppage of menstruation. 5-6 seeds are powdered and taken orally with water in the morning and evening for a few days. Eczema. Sap from young fruit or plant is applied to affected areas every alternate day for 3-4 days.</td>
</tr>
<tr>
<td>10</td>
<td><em>Coccinia grandis</em> (L.) Voigt</td>
<td>Cucurbitaceae</td>
<td>Telakucha</td>
<td>Leaf, root</td>
<td>Diabetes. Three teaspoons of combined leaf and root juice are warmed and taken orally twice daily in the morning and evening. Mucus. 4-5 teaspoons of combined leaf and root juice is slightly warmed and taken orally twice daily.</td>
</tr>
<tr>
<td>11</td>
<td><em>Acalypha indica</em> L.</td>
<td>Euphorbiaceae</td>
<td>Braikandini, Muktajhuri</td>
<td>Root, leaf</td>
<td>Constipation. 2g root is made into a paste with 5-6 teaspoons of water. The paste is strained through cloth and taken orally. Asthma in children. Leaf juice is mixed with ghee, warmed slightly and massaged on the chest.</td>
</tr>
<tr>
<td>12</td>
<td><em>Tamarindus indica</em> L.</td>
<td>Fabaceae</td>
<td>Tetul</td>
<td>Fruit</td>
<td>See <em>Musa sapientum</em>.</td>
</tr>
<tr>
<td>13</td>
<td><em>Mentha spicata</em> L.</td>
<td>Lamiaceae</td>
<td>Pudina</td>
<td>Leaf</td>
<td>Foul odor in mouth. Leaf juice mixed with water is used for gargling. Unconsciousness. Several fresh leaves are held before the nose. Body pain. Tea made from leaves is orally taken. Head lice. Leaf juice is applied to head.</td>
</tr>
<tr>
<td>14</td>
<td><em>Cinnamomum tamala</em> Nees &amp; Eberm</td>
<td>Lauraceae</td>
<td>Teipata</td>
<td>Leaf</td>
<td>Conjunctivitis. Two leaves are washed with warm water and then soaked for several hours in warm water. The water is then strained and applied to eyes twice daily in the morning and evening. Prickly heat. Paste of leaves is applied topically to body 1 hour before taking a bath.</td>
</tr>
<tr>
<td>15</td>
<td><em>Lawsonia inermis</em> L.</td>
<td>Lythraceae</td>
<td>Mehedi</td>
<td>Leaf</td>
<td>Chicken pox. Leaf paste is applied to soles of feet. Mouth and throat lesions. Water in which leaves have been boiled is held for some time in mouth. Pus in ears. 2 drops of warm leaf juice is applied internally to ears for 4-5 days. Nail infections. Paste of leaf is applied topically.</td>
</tr>
<tr>
<td>16</td>
<td><em>Punica graminatum</em> L.</td>
<td>Lythraceae</td>
<td>Dalam</td>
<td>Bark, leaf, flower, fruit</td>
<td>Dysentery. Bark is boiled and the water taken orally. Spontaneous abortion problem. Paste of leaf is mixed with paste of bark of <em>Santalum album</em> and a little honey and then taken orally with yoghurt. Nose bleed. Flower juice is taken through the nose. Insomnia. Fruit juice is mixed with leaf pulp of <em>Aloe vera</em> and taken orally for 2-3 days.</td>
</tr>
<tr>
<td>17</td>
<td><em>Asadodhata indica</em> A. Juss.</td>
<td>Meliaceae</td>
<td>Neem</td>
<td>Leaf</td>
<td>Blurred vision. 3-7 drops of leaf juice are taken orally with milk or water. Jaundice. 25-30 drops of leaf juice is taken orally with a little honey every morning on an empty stomach.</td>
</tr>
<tr>
<td>No.</td>
<td>Species</td>
<td>Family</td>
<td>Part(s)</td>
<td>Use</td>
<td>Preparation</td>
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</tr>
</tbody>
</table>
| 18  | Artocarpus heterophyllus Lam. | Moraceae  | Kanthal   | Fruit, leaf  5-6 teaspoons of fruit juice are taken orally twice daily.  
Any type of skin diseases. 2-3 young leaves are boiled in 2 cups of water till the volume reaches 1 cup. The decoction is then strained and taken orally twice daily in the morning and evening. The affected areas of the skin are also washed with the decoction. |
| 19  | Musa sapientum L.             | Musaceae  | Kola      | Fruit  Blood dysentery. One ripe fruit is mixed with half amount of tamarind (Tamarindus indica) fruit, sugar and table salt and taken orally twice daily.  
Dry cough. Paste of ripe fruit is mixed with water and strained through a piece of cloth. Two teaspoons of the strained mixture is taken orally twice daily in the morning and evening. |
| 20  | Psidium guajava L.             | Myrtaceae | Peyara    | Fruit, leaf  Loss of appetite. Half-ripe fruit is boiled with rice and made into a paste. The seeds are taken out and the rest taken orally with a little table salt and sugar.  
Infections due to burns. 25g each of young leaves and fruits are taken and paste prepared from the mixture. The paste is fried in 50-60g mustard oil after the oil has been boiled and any froth gone. The oil is strained through a piece of thick cloth, bottled and applied topically daily. |
| 21  | Syzygium cumini (L.) Skeels    | Myrtaceae | Jaam      | Leaf, bark  Blood dysentery. 2-3 teaspoons of juice obtained from young leaves are slightly warmed and taken orally with goat milk for 2-3 days.  
To stop bleeding from external cuts and wounds. Leaf juice is applied topically.  
Bed wetting. 2-3 teaspoons of leaf juice (adults) and ½ to 1 teaspoonful of leaf juice (children) is taken orally daily with ½ teaspoon of ghee (clarified butter) for a week. Gum infections. Powdered bark is used to brush teeth at every 1-2 days interval. |
| 22  | Averrhoa carambola L.          | Oxalidaceae | Kamranga  | Leaf  Chronic fever. 2g amount of powdered leaves mixed with water is taken orally twice daily in the morning and evening for 3-4 days. |
| 23  | Oxalis corniculata L.          | Oxalidaceae | Sushuni shak | Whole plant  Hypertension. 12g whole plants are made into a paste, mixed with water and strained followed by mixing with sugar and taken in the form of sherbet. For diabetic patients, sugar should not be added.  
Less intellectual ability. Whole plant is dried and powdered. Half to one gram powder for children and 2g powder for adults is taken orally with ½ cup milk and sugar for 3-4 months. |
| 24  | Bambusa tulda Roxb.            | Poaceae   | Bansh     | Leaf  Rheumatic pain. Paste of young leaves is warmed and applied as poultice to affected areas to reduce pain and inflammation. Coughs. Leaf juice is taken orally with honey. |
| 25  | Zizyphus mauritiana L.         | Rhamnaceae | Bori      | Fruit  Chicken pox. Fruits are de-seeded and powdered. 4-5g of the powder is sucked with a small amount of molasses twice daily. |
| 26  | Rosa damascena Mill.           | Rosaceae  | Golap     | Flower bud  Loss of appetite. Paste of buds is mixed with sugar or honey and taken with water in the form of a sherbet. |
| 27  | Dentella repens (L.) J.R. Forst.| Rubiaceae | Gima shak | Leaf  Conjunctivitis. Juice obtained from warm leaves is applied in drops to eyes. |
| 28  | Neolamarckia cadamba Roxb.     | Rubiaceae | Kadam     | Leaf  Helminthiasis in children. Leaves are dried and powdered. A little amount of powder is administered orally to children aged 4-5 years twice daily.  
Infections, lesions on face. Leaf decoction is applied topically. |
| 29  | Aegle marmelos (L.) Corr.      | Rutaceae  | Bael      | Leaf  To increase memory. Three leaves are fried in ghee, mixed with powdered mishri (crystalline sugar) and taken orally daily. Mucus. One teaspoon leaf juice is taken orally daily. |
In most cases a single plant or plant part was used for treatment although in a few cases the FH used more than one plant. For instance, for treatment of insomnia, the FH advised partaking of the fruit juice of *Punica granatum* along with fruits of *Musa sapientum* along with fruits of *Tamarindus indica*. A rather interesting feature of the FH’s treatment was using various plant parts of the same plant to treat different diseases. For instance, bark of *Mangifera indica* was used to treat dysentery, blood dysentery, rumbilings in the stomach, and stomach pain. Leaves of the plant were used against early loss of teeth, while gum of the plant was used against cracking of leg skin.

The use of a number of the plants by the FH was novel. For instance, the FH used the leaves of *Adhatoda vasica* to prevent chicken pox and to brighten skin color. The major folk medicinal uses of the plant reported from Bangladesh include use against upper respiratory tract infections like coughs or against tuberculosis [5,46]. The FH used bark of *Mangifera indica* against dysentery and blood dysentery. The Pahan tribe of Natore district, Bangladesh, also uses the bark of the plant along with other plants for treatment of blood dysentery. However, the other uses of parts of the plant by the FH like leaves against loss of teeth or gum against cracked skin of leg is rather novel and has not been reported earlier to the best of our knowledge. *Amaranthus spinosus*, used by the FH to treat irregular menstruation and leucorrhrea, has previously been reported to be used in Bangladesh for treatment of dysentery. The Soren clan of the Santal tribe in Rajshahi district, Bangladesh, uses the plant to increase libido.

Some other novel uses of plants by the FH include use of fruits of *Annona squamosa* to treat malnutrition followed by deteriorating health, use of *Areca catechu* to treat severe skin infection and rheumatic pain, use of *Cocos nucifera* to treat migraine and passing of sugar-like crystals with urine, and fruits of *Phoenix dactylifera* to treat bronchitis and whooping coughs. These are not the complete list of novel uses by the FH but just a few instances. Practically, the use of virtually all the plants in treatment of various ailments has previously been unreported, at least for Bangladesh. Different uses of the same four plant species can also be found in the scientific literature for various communities at various localities in India. The Gond tribe of Bhandara district, Maharashtra, India use root powder of *Annona squamosa* to reduce weight, and seed powder of the same plant to increase strength in men [13]. The Kani tribes of Pechipparai Hills, Southern Western Ghats of Tamil Nadu, India, use *Areca catechu* as a vermifuge and for treatment of sore lips [63]. In Ivanur Panchayat, Cuddalore district, Tamil Nadu, India, the locals use *Cocos nucifera* as a vermifuge and for treatment of urinary diseases [28]. In Dharmabad Taluka of Nanded district, Maharashtra, India, *Phoenix dactylifera* is used for treatment of debility [11].

However, the use of *Coccinia grandis* for treatment of diabetes (as used by the FH) is quite common in Bangladesh and has previously been reported for folk medicinal practitioners in Jamalpur district [22]. The use of *Lawsonia inermis* for treatment of various skin diseases has been reported for Kurigram district, Bangladesh [10]; thus the use of this plant by the FH for chicken pox can be treated as not totally a novel use of the plant. Interestingly, the Mullu kuruma tribe of Wayanad district, Kerala, India, also uses the plant against skin diseases [62]. The use of *Azadirachta indica* has also been reported for treatment of jaundice in Bangladesh [9], so this is also not an instance of a new use for this plant by the FH. The tribal people of North Maharashtra, India, also use the plant against jaundice [3]. On the other hand the FH also used the leaf juice of the plant to treat blurred vision, which is a new use of the plant. *Artocarpus heterophyllus* was used by the FH for treatment of bloating and any type of skin diseases. Folk medicinal practitioners in Noakhali district, Bangladesh also use the plant against bloating and skin diseases. The leaves of the plant are also used against skin diseases in Tamil Nadu, India [12].

Overall, it may be concluded that although some plants and the diseases treated by the FH are in common with other folk medicinal and tribal medicinal practitioners of Bangladesh and in India, a large number of plants were used in novel treatment of diseases by the FH. Thus the medicinal practice of the FH deserves scientific attention towards possible drug discoveries.
REFERENCES


