FOLK MEDICINAL USES OF SOME PLANTS IN TANGAIL
DISTRICT, BANGLADESH


Department of Pharmacy, University of Development Alternative, Dhanmondi, Dhaka-1209, Bangladesh.

ABSTRACT

Background Folk medicine is an important feature of traditional medicinal practices in Bangladesh. The objective of this study was to document the medicinal uses of plants by a folk medicinal practitioner (Kaviraj) of Tangail district, Bangladesh. Methods Interviews of the Kaviraj were carried out with the help of a semi-structured questionnaire and the guided field-walk method. Results The Kaviraj used 12 plants distributed into 12 families in his formulations. Available ethnomedicinal and scientific reports show that the plants used by the Kaviraj can be validated in their uses on the basis of either ethnomedicinal consensus or pharmacological activity studies. Conclusion The study suggests that the medicinal plants used by the Kaviraj of Tangail district merit scientific attention towards new drug discoveries.

Key words: Folk medicine, Kaviraj, Tangail, Bangladesh, ethnomedicinal consensus.

BACKGROUND

Ethnomedicine is the study of medicinal plants used by ethnic groups or indigenous societies for the treatment and cure of diverse ailments. The practicing of curing diseases dates back to millennia ago, and it is possible that human beings have discovered the disease-curing properties of plants either on their own or through watching the plant ingestion behavior of animals like chimpanzees and other apes. In fact, chimpanzees are known to ingest plants.
which have ethnomedicinal uses among the people residing in the vicinity of the chimpanzees. [1] In recent years, ethnomedicine is gaining much deserved scientific attention, because the plant kingdom is increasingly considered as a vital source for new compounds to combat emerging diseases as well as old diseases, whose causative vectors have become resistant to existing drugs.

The diversity of the plant kingdom is also the cause for ethnic diversity in the use of plants for treatment of diseases. A given plant may possess dozens of secondary metabolites, each with their unique pharmacological properties, which can be helpful in the treatment of a specific disease. A particular ethnic group or a particular traditional practitioner may be knowledgeable on one or a few such medicinal properties of a plant but not all. As a result, there is a vital need to document such ethnomedicinal or traditional medicinal practices, before they get lost either due to tribal extinctions or extinctions of an ethnomedicinally used plant species. This would be catastrophic for in the United States alone, out of the 150 top prescription drugs at least 118 are based on natural sources. Less than 1% of tropical plant species has been screened for potential pharmaceutical applications and medicinal plants are increasingly becoming endangered if not totally extinct because of loss of forests due to increased use of that land for human habitat and agriculture. It has been estimated that at the current extinction rate, the world is losing one potential major drug every two years. [2]

Bangladesh is a unique country with various forms of traditional medicinal systems in existence. Besides, the country has over 100 tribes, each tribe with their own traditional medicinal practitioners and their own unique formulations, primarily consisting of medicinal plants. Towards documenting this traditional uses of medicinal plants we had been conducting ethnomedicinal surveys among folk medicinal practitioners (they practice within the mainstream population and are known as Kavirajes) and tribal medicinal practitioners for a number of years. [3-29] These surveys are enabling us to build up a comprehensive data base of the medicinal plants of the country. The objective of this survey was to document the medicinal plants and formulations of a Kaviraj (folk medicinal practitioner) in Tangail district of Bangladesh.

**METHODS**

Prior Informed Consent was first obtained from the Kaviraj, Mohammad Ali, age 45 years, practicing in Patalbazar village of Tangail district, Bangladesh. The Kaviraj was apprised as to the nature of our visit and consent obtained to disseminate any information both nationally
and internationally. Actual interviews were conducted in the Bengali language, which was spoken fluently by the Kaviraj as well as the interviewers. The interviews were conducted with the help of a semi-structured questionnaire and the guided field-walk method of Martin [30] and Maundu. [31] In this method the Kaviraj took the interviewers on guided field-walks through areas from where he collected his medicinal plants, pointed out the plants, and described their uses. All plant specimens were photographed and collected on the spot, pressed, dried and brought back to Bangladesh National Herbarium at Dhaka for identification. Voucher specimens were deposited with the Medicinal Plant Collection Wing of the University of Development Alternative. During the interview process, the Kaviraj mentioned that although he did not use many plants, he claimed that his formulations were effective.

RESULTS
The Kaviraj used a total of 12 plants distributed into 12 families in his formulations. The various formulations were used to treat diseases like urinary disorders, oral lesions, diabetes, leucorrhea, pain, gastrointestinal disorders, cuts and wounds, jaundice, helminthiasis, and coughs. Altogether four formulations were used for treatment of gastrointestinal disorders, which was not surprising considering that gastrointestinal disorders like dysentery, diarrhea, indigestion or bloating are common among the rural people of Bangladesh because of lack of quality drinking water and the general unhygienic conditions of living without proper sanitary facilities. The Kaviraj mainly used simple formulations of plant parts in his treatment. The results are shown in Table 1.
Table 1. Medicinal plants and formulations of the Kaviraj from Tangail district

<table>
<thead>
<tr>
<th>Serial Number</th>
<th>Scientific Name</th>
<th>Family Name</th>
<th>Local Name</th>
<th>Parts used</th>
<th>Disease, Symptoms, Formulations, and Administration</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td><em>Amaranthus spinosus</em> L.</td>
<td>Amaranthaceae</td>
<td>Kata khoira mota</td>
<td>Root</td>
<td>Urinary disorders. Root juice is orally taken.</td>
</tr>
<tr>
<td>2</td>
<td><em>Centella asiatica</em> (L.) Urb.</td>
<td>Apiaceae</td>
<td>Thankuni</td>
<td>Leaf</td>
<td>Oral lesions, diabetes. Leaf juice is orally taken.</td>
</tr>
<tr>
<td>3</td>
<td><em>Calotropis gigantea</em> R. Br.</td>
<td>Apocynaceae</td>
<td>Akondo gach</td>
<td>Gum</td>
<td>Leucorrhea. Gum is mixed with honey and topically applied to affected areas of the skin. This is done for several days. Pain. Warm leaves are applied as poultice on painful areas.</td>
</tr>
<tr>
<td>4</td>
<td><em>Kalanchoe pinnata</em> (Lam.) Pers.</td>
<td>Crassulaceae</td>
<td>Pathorkuchi</td>
<td>Leaf</td>
<td>Indigestion, bloating. Leaves are chewed with a little table salt.</td>
</tr>
<tr>
<td>5</td>
<td><em>Litsea monopetala</em> (Roxb.) Persoon</td>
<td>Lauraceae</td>
<td>Kharajora gach</td>
<td>Leaf</td>
<td>Constipation, dysentery, indigestion. Leaves are soaked in water and the water taken orally.</td>
</tr>
<tr>
<td>6</td>
<td><em>Cynodon dactylon</em> (L.) Pers.</td>
<td>Poaceae</td>
<td>Dubla ghash</td>
<td>Leaf</td>
<td>To stop bleeding from cuts and wounds. Crushed or chewed leaves are applied to area of bleeding.</td>
</tr>
<tr>
<td>7</td>
<td><em>Persicaria orientalis</em> (L.) Spach</td>
<td>Polygonaceae</td>
<td>Hati shunr</td>
<td>Root</td>
<td>To increase frequency of urination. Root juice is orally taken.</td>
</tr>
<tr>
<td>8</td>
<td><em>Ziziphus jujube</em> Mill.</td>
<td>Rhamnaceae</td>
<td>Choto boroi gach</td>
<td>Root</td>
<td>Waist pain. The soil around the plant is at first loosened on all sides. Then, facing east, the plant is plucked in one breath on a Saturday evening. The roots are put inside an amulet made from seven metals and the amulet is tied to the waist.</td>
</tr>
<tr>
<td>9</td>
<td><em>Glycosmis pentaphylla</em> (Retz.) DC.</td>
<td>Rutaceae</td>
<td>Motar gach</td>
<td>Bark of root, leaf</td>
<td>Jaundice. One kg of cow milk is at first kept for 1 day. When the milk becomes dense as yoghurt, bark of root is sliced into small pieces, mixed with the milk, and taken orally with sugar and ‘cheera’ (flattened rice flakes) for 3 consecutive days. Helminthiasis. Leaf paste is orally taken.</td>
</tr>
<tr>
<td>10</td>
<td><em>Scoparia dulcis</em> L.</td>
<td>Scrophulariaceae</td>
<td>Chini pata</td>
<td>Leaf</td>
<td>Dysentery. Leaves are soaked in water followed by drinking the water for 2-3 days.</td>
</tr>
<tr>
<td>11</td>
<td><em>Datura metel</em> L.</td>
<td>Solanaceae</td>
<td>Dhutra</td>
<td>Fruit</td>
<td>Whooping cough. Fruits are cut into small pieces, boiled in water and then held near the throat.</td>
</tr>
<tr>
<td>12</td>
<td><em>Lippia alba</em> (Mill.) N.E. Br. ex Britton &amp; P. Wilson</td>
<td>Verbenaceae</td>
<td>Gondho pata</td>
<td>Leaf</td>
<td>Diarrhea. Leaf paste is orally taken.</td>
</tr>
</tbody>
</table>
DISCUSSION

It was of interest to evaluate the plants of the Kaviraj for their reported ethnomedicinal uses and reported pharmacological properties. The roots of *Amaranthus spinosus* were used by the Kaviraj to treat urinary disorders. He also used roots of *Persicaria orientalis* to increase frequency of urination. The tribal people of Northeast Gujarat, India, also reportedly use roots of *Amaranthus spinosus* to cure painful urination and as a diuretic. Root paste is also used for urinary troubles in Aravali regions of Rajasthan, India. Betalains have been reported to be present in the plant, and it would be interesting to analyze the effect of these compounds on urinary retention or other form of urinary tract disorders. The use of *Persicaria orientalis* for treatment of urine retention seems to be unique to this Kaviraj and offers researchers an avenue to further explore this plant. The roots of a related species, *Persicaria senegalensis* are used in Agnalazaha littoral forest people of Southeastern Madagascar to treat malaria. *Persicaria capitata* is used in China for urologic disorders.

*Centella asiatica* was used by the Kaviraj to treat diabetes; the plant has been shown to give antidiabetic effect in diabetic model rats. Although any ethnomedicinal reports on the use of the plant against oral lesions have not been reported to our knowledge, wound healing activity of various extracts of the plant in incision and burn wound models in experimental animals has been reported. Thus the plant could prove useful in treatment of oral lesions.

The gum of *Calotropis gigantea* was used by the Kaviraj against leucorrhea and pain. The roots of the plant are used against cholera in traditional medicines of Chitrakoot region, Madhya Pradesh, India. The use of the plant or any of its parts against leucorrhea appears to be uncommon from the available reported ethnomedicinal uses. However, ethnomedicinal uses of leaves of the plant against inflammation on the body have been reported from Rewa district, Madhya Pradesh, India. Leaves, roots and flowers of the plant are used in Daudkandi sub-district of Comilla district of Bangladesh by folk medicinal practitioners for treatment of coughs and dysentery. Antiinflammatory and analgesic activities have been reported for ethanolic extract of leaves in scientific studies. Ethnomedicinal uses of leaves against pain have also been reported from Rajshahi district, Bangladesh. Thus, there is a possibility that the gum may also have analgesic properties.

Leaves of *Kalanchoe pinnata* were used by the Kaviraj against indigestion and bloating. In Silakhana village of Bagerhat district, Bangladesh, the leaves are used against indigestion and...
diarrhea. [42] Leaves of Litsea monopetala were used by the Kaviraj against constipation, dysentery and indigestion. The bark of the plant is used against diabetes and gastric troubles by ethnic communities in Arunachal Pradesh, India. [43] Bark of the plant is used against constipation by the Naik clan of the Rajbongshi tribe in Bangladesh. [44] Leaves of Cynodon dactylon were used by the Kaviraj to stop bleeding from cuts and wounds. This wound healing potential has been scientifically validated in both incision and excision wound healing models. [45, 46] The plant is also used by folk medicinal practitioners in villages of Rajshahi district to stop bleeding from cuts and wounds. [28] The use of Ziziphus jujube roots to treat waist pain was somewhat unusual. Roots were sealed in an amulet prepared from seven metals and tied to the waist. While the use of amulets to cure or treat diseases is not unusual and the practice is present in many countries of the world, [47] any scientific validation of such use is yet to be determined.

The hepatoprotective activity of Glycosmis pentaphylla has been scientifically validated; [48] the Kaviraj used the plant against jaundice. Scoparia dulcis has traditional uses in diarrhea and dysentery; [49] the Kaviraj used the plant against dysentery. In Barobazar village of Jhenaidaha district, Bangladesh, the plant is used for treatment of dysentery in adults. [50] The Kaviraj used fruits of Datura metel against whooping cough. The plant has traditional uses in Nigeria for treatment of coughs. [51] Leaves of Lippia alba were used by the Kaviraj against diarrhea. In Colombian traditional medicine, the plant is used against diarrhea. [52] Although the number of plants used by the Kaviraj was few, which can be sometimes suggestive of lack of detailed medicinal plant knowledge, the above Discussion clearly shows that ethnomedicinal consensus regarding use is present on several plants used by the Kaviraj, while other plants can be seen to be scientifically validated on the basis of available pharmacological activity studies.

CONCLUSION
The ethnomedicinal consensus and scientific validations of the plants used by the Kaviraj suggest that these plants merit further studies towards discovery of lead compounds and new drugs. The study also suggests that the rural Kavirajes of Bangladesh, even if their repertoire of plants is small, should not be left out for much can be gained from their medicinal knowledge.

CONFLICTS OF INTEREST
The authors declare that there are no conflicts of interest.
REFERENCES


10. Rahmatullah M, Jahan R, Khatun MA, Jahan FI, Azad AK, Bashar ABMA, Majee ZUM, Ahsan S, Nahar N, Ahmad I, Chowdhury MH: A pharmacological evaluation of medicinal plants used by folk medicinal practitioners of Station Purbo Para Village of


