A survey of medicinal plants used by folk medicinal practitioners in two villages of Tangail district, Bangladesh


ABSTRACT

Folk medicinal practitioners (Kavirajes) of Bangladesh are consulted for treatment of various ailments by a substantial segment of the rural and urban population of the country. The major element that distinguishes the folk medicinal practitioners from other forms of medical practices is their use of simple formulations of medicinal plants for treatment. The plant(s) used by the Kavirajes for treatment of any specific ailment vary considerably in the various parts of the country, and such differences exist even among Kavirajes of adjoining villages. The objective of the present study was to conduct an ethnomedicinal survey among the Kavirajes of two villages, namely Babla and Terbaria, which lies in Tangail district in the central portion of the country. Each village had one practicing Kaviraj. After obtaining informed consent from the Kavirajes, interviews were conducted with the help of a semi-structured questionnaire and the guided field-walk method. It was observed that the Kavirajes of the two villages used a total of 28 plants distributed into 22 families for treatment of various ailments. Leaves constituted the major plant part used, being used 48.7% of the time. From the number of plants used, it appeared that gastrointestinal tract disorders formed the major complaint of the patients with 5 plants used for treatment of various complaints like constipation, diarrhea, indigestion, and loss of appetite. Four plants each were used for treatment of pain, and skin disorders (scabies, eczema), and as blood purifier. Four plants were used for treatment of diseases in cattle. Among other ailments treated by the Kavirajes were tuberculosis, sexual disorders, urinary problems, infections, fever, hepatic disorders, kidney problems, pneumonia, stomach stones, diabetes, swellings, debility, helminthiasis, hypertension, vitamin C deficiency, tumor, and poisoning. One plant was used to maintain the body in good health and so served as a preventive measure instead of a curative effect. Since a number of allopathic medicines have been derived from medicinal plants, the plants reported in the present survey can, following scientific inquiry, form novel sources of newer drugs.

Key words: Folk medicine, medicinal plants, Tangail, Bangladesh

Corresponding Author: Professor Dr. Mohammed Rahmatullah, Pro-Vice Chancellor University of Development Alternative House No. 78, Road No. 11A (new) Dhanmondi R/A, Dhaka-1205 Bangladesh Email: rahamatm@hotmail.com Fax: 88-02-8157339
**Introduction**

Traditional medicinal practices, even in these days of allopathic medicine, form a major form of healthcare provision in many countries of the world, including Bangladesh. Folk medicinal practitioners, otherwise known as Kavirajes cater to a substantial number of both rural and urban populations of the country. Folk medicinal practices have been present in Bangladesh from time immemorial and the Kavirajes have a number of adherents as patients, who still do not accept allopathic medicinal treatment. The diversity of patients among the Kavirajes, who although poor in general, but also comprise of members from the affluent class, testifies to the popularity and efficacy of folk medicinal practices. In fact, Kavirajes form the last resort for many patients in Bangladesh, whose ailments could not be successfully treated with allopathic medicine.

The Kavirajes, as a whole, use medicinal plants or plants parts to form simple formulations, which they apply for treatment. Usually such formulations consist of maceration or crushing of whole plant or plant parts to obtain juices, which may then be administered orally or topically depending on the ailment treated. A plant may be used to treat multiple ailments of a diverse nature. On rare occasions, a plant may be administered in the cooked form. When administered orally, the juice or the crushed plant may be prescribed with sugar, molasses or salt to make it more palatable to the patient. When administered topically, a plant part may be mixed with oil (usually mustard oil) to make the formulation more even and easily applicable. Although done comparatively on a smaller scale, there are instances where a combination of plants or plant parts is used. Usually such combinations reflect synergistic action on the treatment process by the combination. Combination of plants may also take place if the main plant used for treatment has side-effects and another plant is added to counteract the side effects.

Bangladesh has over 86,000 villages with each village having one or more practicing Kavirajes. The villagers have for centuries been treated by the Kavirajes, who usually occupy a special position among the villagers and are consulted for treatment of both humans and cattle. Each Kaviraj has his or her own unique repertoire of medicinal plants, the knowledge of which is closely guarded and usually passed on to a successive generation of the family, who has decided to take on the medicinal practice. An individual Kaviraj also experiments with new species of plants, which if found to be successful in its use, is added to the repertoire of medicinal plants of the Kaviraj. Thus, over time, considerable differences arise between the selections of medicinal plants between Kavirajes of even adjoining villages, despite the presence of similar medicinal plant species in both localities. Bangladesh has over 5,000 floral species. To get a comprehensive picture of the flora of Bangladesh, which can be classified as medicinal plants, one therefore has to practically conduct surveys among Kavirajes of individual villages and the tribes; virtually each tribe of Bangladesh also has their own tribal medicinal practitioners, who among other things, also rely on medicinal plants for treatment of various ailments.

We had been conducting ethnomedical surveys among the Kavirajes (who belong to the mainstream population) and the tribal medicinal practitioners for a number of years. Our surveys have confirmed the differences in use of medicinal plants by Kavirajes as well as tribal medicinal practitioners (Hossan, M.S., 2010; Rahmatullah, M., 2010; Nawaz, A.H.M.M., 2009; Hanif, A., 2009; Hossan, Md. Shahadat, 2009; Rahmatullah, M., 2009; Rahmatullah, M., 2009; Rahmatullah, M., 2009; Rahmatullah, M., 2009; Rahmatullah, M., 2009). To obtain a greater perspective on the medicinal plants of Tangail district, which lies in the central part of Bangladesh, the present survey was conducted among the Kavirajes of two villages of the district. The two villages, namely Babla and Terbaria, fall respectively, in two different Upazillas (sub-districts) of Tangail district, namely Kalihati and Bhuapur.

**Materials and Methods**

The survey was conducted in two villages of Tangail district, namely Babla and Terbaria. The villages, respectively, fall in two sub-districts of Tangail – Kalihati and Bhuapur. Tangail district is in the central part of Bangladesh. The main occupation of the villagers of the two villages surveyed is agriculture. Each village surveyed had its own practicing Kaviraj. Kaviraj Md. Samad Mondol practiced in Babla village, while Kaviraj Md. Anwar Hossain practiced in Terbaria village.

Informed consent was obtained from both Kavirajes prior to the survey. Interviews were conducted in Bengali, the language spoken by both Kavirajes and the interviewers. Ethnobotanical methods like semi-structured questionnaire and the guided field-walk method as described by Martin (1995) and Maundu (1995) were employed during the survey process. In the guided field-walk method, the Kavirajes took the interviewers during daytime to places from where they collected their medicinal plants, pointed out the plants, and gave an account of their local names and uses. All information obtained was cross-checked with the Kavirajes in later evening sessions. Plant specimens were photographed and collected on the spot. They were dried in the
The Kavirajes of the two villages surveyed used 28 plants distributed into 22 families for treatment of various ailments. The results are shown in Table 1. The Amaranthaceae family contributed the highest number of plant species (three). The Kavirajes of the two villages surveyed differed considerably as to selection of plant parts in their formulations. Leaves constituted the major plant part used (48.7%), followed by fruits (17.9%) and stems (12.8%). Roots, whole plants, and rhizomes constituted 10.3%, 5.1%, and 2.6%, respectively, of total uses. The wood from trunk of the plant was used 2.6% of the time. Surprisingly, barks, seeds, flowers, and gum were not at all used by the Kavirajes.

### Table 1: Medicinal plants used by the Kavirajes of Babla and Terbaria villages in Tangail district.

<table>
<thead>
<tr>
<th>Serial Number</th>
<th>Scientific Name</th>
<th>Family Name</th>
<th>Local Name</th>
<th>Part utilized</th>
<th>Ailment/Symptom treated</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Justicia adhatoda L.</td>
<td>Amaranthaceae</td>
<td>Kalo durba</td>
<td>Stem</td>
<td>Tuberculosis. Stems are soaked in water and taken with sugar.</td>
</tr>
<tr>
<td>2</td>
<td>Achyranthes aspera L.</td>
<td>Amaranthaceae</td>
<td>Udvid nagra</td>
<td>Leaf, root</td>
<td>Wet dreams, constipation, burning sensations during urination. Juice from macerated leaves is taken as treatment of wet dreams. Macerated roots are taken for constipation. Roots are taken with cold water for burning sensations during urination.</td>
</tr>
<tr>
<td>3</td>
<td>Alternanthera sessilis (L.) DC</td>
<td>Amaranthaceae</td>
<td>Chenchi shak</td>
<td>Leaf</td>
<td>Infections (used as antiseptic), scabies, eczema. Macerated leaves are applied and taken.</td>
</tr>
<tr>
<td>4</td>
<td>Amaranthus spinosus L.</td>
<td>Amaranthaceae</td>
<td>Khuira kanta</td>
<td>Leaf, stem</td>
<td>Jaundice. Leaves and stems are fried and eaten.</td>
</tr>
<tr>
<td>5</td>
<td>Centella asiatica (L.) Urb.</td>
<td>Apiaceae</td>
<td>Thankuni</td>
<td>Leaf</td>
<td>Fever, pain. Juice from macerated leaves is taken.</td>
</tr>
<tr>
<td>6</td>
<td>Alstonia scholaris (L.) R.Br.</td>
<td>Apocynaceae</td>
<td>Chaitan</td>
<td>Leaf, wood</td>
<td>Restlessness in cows. A piece of wood is tied to the hoof. Kidney and hepatic problems. Juice from a mixture of macerated leaves of Smilax china and Alstonia scholaris is taken.</td>
</tr>
<tr>
<td>7</td>
<td>Calotropis gigantea (L.) Ait.f.</td>
<td>Asclepiadaceae</td>
<td>Akondo</td>
<td>Leaf</td>
<td>Pneumonia, severe pain. Leaves are taken during pneumonia. Leaves are warmed in oil and applied to painful areas.</td>
</tr>
<tr>
<td>8</td>
<td>Ageratum conyzoides L.</td>
<td>Asteraceae</td>
<td>Shial moti</td>
<td>Leaf</td>
<td>To expedite delivery in cows. Leaf juice is orally administered.</td>
</tr>
<tr>
<td>9</td>
<td>Xanthium indicum J. Koennig ex Roxb.</td>
<td>Asteraceae</td>
<td>Ghagra kanta</td>
<td>Leaf</td>
<td>Skin diseases. Juice obtained from macerated leaves is simultaneously orally taken and topically applied to affected areas.</td>
</tr>
<tr>
<td>10</td>
<td>Opuntia dilleni (Ker-Gawl.) Haw.</td>
<td>Cactaceae</td>
<td>Moni raj</td>
<td>Whole plant</td>
<td>To maintain the body in good health. Juice from macerated whole plant is taken.</td>
</tr>
<tr>
<td>11</td>
<td>Kalancheoe pinnata (Lam.) Pers.</td>
<td>Crassulaceae</td>
<td>Pathorkuchi</td>
<td>Whole plant</td>
<td>Stone formation in stomach. Juice from macerated whole plant is taken.</td>
</tr>
<tr>
<td>12</td>
<td>Coccinia grandis (L.) J. Voigt</td>
<td>Cucurbitaceae</td>
<td>Telakuchi</td>
<td>Leaf, root, fruit</td>
<td>Diabetes, swellings. Macerated roots are taken for diabetes. Macerated leaves are massaged onto swellings. Diarrhea, blood purifier, loss of appetite, indigestion. Stems of Leucas aspera are mixed with leaves of Azadirachta indica and leaves and fruits of Coccinia cordifolia and taken.</td>
</tr>
<tr>
<td>13</td>
<td>Cyperus rotundus L.</td>
<td>Cyperaceae</td>
<td>Vadal</td>
<td>Stem</td>
<td>Pain. Juice from macerated stem is taken.</td>
</tr>
<tr>
<td>14</td>
<td>Dioscorea bulbifera L.</td>
<td>Dioscoreaceae</td>
<td>Goiza alu</td>
<td>Fruit</td>
<td>To increase strength. Boiled fruits are eaten.</td>
</tr>
<tr>
<td>15</td>
<td>Euphorbia tirucalli L.</td>
<td>Euphorbiaceae</td>
<td>Dudh kora</td>
<td>Leaf, stem</td>
<td>To increase milk production in cows. Leaves and stems are fed to cows.</td>
</tr>
</tbody>
</table>
In their formulations, the Kavirajes were observed to use both a single plant part as well as a combination of plant parts for treatment of a given ailment. The stems of *Justicia adhatoda* were used for treatment of tuberculosis. On the other hand, a combination of leaves and stems of *Amaranthus spinosus* was used by the Kavirajes for treatment of jaundice. A single plant part may be used for treatment of diverse ailments. As an instance, the leaves of *Calotropis gigantea* were used for treatment of pneumonia, as well as severe pain. Multiple plant parts from the same plant may also be used for treatment of multiple ailments. The leaves and fruits of *Psidium guajava* were used for treatment of diarrhea and debility, respectively. In this case, the leaves were used to treat diarrhea, while the fruits were used to treat debility.

The number of plants used for treatment of any ailment or disorder generally indicates the prevalence of the disorder or ailment among the population treated. From that viewpoint, gastrointestinal disorders like constipation, diarrhea, indigestion, and loss of appetite were the most common disorders among the population of the two villages surveyed. A total of five plants were used for treatment of gastrointestinal disorders. Four plants each were used for treatment of pain and skin disorders (scabies, eczema). Four plants were also used as blood purifier. In our various ethnomedical surveys throughout Bangladesh, we have noticed that the Kavirajes attribute considerable importance to what they term “purification of blood”. In their opinion, blood, over time, accumulates toxins through ingestion of food or through exposure to various environmental factors. Such blood, if not purified, can cause different ailments to occur. As such, the blood must be purified through ingestion of various plants or plant parts. The leaves of *Clerodendrum viscosum* were prescribed by the Kavirajes to be taken orally for blood purification. The Kavirajes furthermore believed that some ailments, by themselves, can also result in accumulation of toxin in the blood. Blood purification, was therefore considered a necessary measure for elimination of such ailments and to cure the patient fully.
The Kavirajes were aware of and used several plants for treatment of ailments, which are hard to cure or incurable with modern medicine. Such ailments include kidney disorders, hepatic problems, diabetes, hypertension, and tumors. The Kavirajes used two plants for treatment of kidney problems, three plants for hepatic problems, and one plant each for diabetes, hypertension, and tumors, respectively. One plant used by the Kavirajes, namely *Opuntia dillenii*, was used more as a preventive measure, i.e. to keep the body in good health, rather than as a curative measure.

Only in two instances, we observed that the Kavirajes were using multiple plant combinations for treatment of ailments. Juice from macerated leaves of *Smilax china* and *Alstonia scholaris* was administered orally for kidney or hepatic disorders. Stems of *Leucas aspera* were mixed with leaves of *Azadirachta indica* and leaves and fruits of *Coccinia cordifolia* and orally administered as treatment for diarrhea, loss of appetite, and indigestion, as well as for blood purifying purposes. Four plants were used to treat cattle diseases. *Alstonia scholaris* was used for treatment of restlessness in cows. *Ageratum conyzoides* was used to expedite delivery in cows. *Euphorbia tirucalli* was used to increase milk production in cows. *Solanum surattense* was used for treatment of tumors in humans as well as swelling of throat in cattle.

Most of the plants used by the Kavirajes were obtained from the wild. However, *Psidium guajava*, *Syzygium malaccense*, *Zizyphus jujuba*, and *Citrus acida* were cultivated for their fruits, and *Curcuma longa* for its use as a spice. The rhizomes of *Curcuma longa* (English: turmeric) are boiled, dried and powdered prior to use as a spice in virtually all fish, meat and vegetable dishes of Bangladesh.

Existing scientific reports validate the folk medicinal use of a number of plants obtained in the present survey. The anti-tubercular action of *Justicia adhatoda* (used by the Kavirajes for treatment of tuberculosis) has been reported (Gupta, K.C. and Chopra, I.C., 1954; Barry, V.C., 1955). Two semi-synthetic derivatives of vasicine (a constituent of the plant), namely bronchexine and ambroxol, have been found to be active *in vitro* against *Mycobacterium tuberculosis* (Grange, J.M., and Snell, N.J., 1996). Extract of the plant has also been found to be active against multi-drug resistant strains of *Mycobacterium tuberculosis* (Gupta, R., 2010). The hepatoprotective action of *Amaranthus spinosus* (used by the Kavirajes against the hepatic disorder, jaundice) has also been demonstrated against d-galactosamine/lipopolysaccharide as well as carbon tetrachloride-induced hepatic damages (Zeashan, H., 2010; Zeashan, H., 2009; Zeashan, H., 2008). *Alstonia scholaris* was observed to be used by the Kavirajes against hepatic problems. The plant has also been shown to exert a protective effect against hepatotoxin-induced acute liver damage (Lin, S.C., 1996).

The antinociceptive activity of latex of *Calotropis procera* has reportedly been demonstrated in mice (Soares, P.M., 2005). Notably, the Kavirajes use the plant for treatment of severe pain. The anti-diarrheal activity of *Psidium guajava* (used by the Kavirajes for treatment of diarrhea) has also been documented in the scientific literature (Ojewole, J.A.O.,2008; Birdi, T., 2010). *Nyctanthes arbor tristis*, which was observed by the Kavirajes to be used as treatment for fever has been also shown to possess antipyretic activity (Saxena, R.S., 1987).

Taken together, it can be argued that other plants used by the Kavirajes and on which relevant scientific studies have not yet been conducted may prove their scientific validity once such studies are undertaken. Overall, the results suggest that the medicinal plants used by the Kavirajes in two villages of Tangail district, Bangladesh possess considerable potential in containing constituents, which may form the basis of discovery of novel and efficacious therapeutics.

References


