ETHNOMEDICINAL WISDOM OF SEVERAL FOLK HERBALISTS OF DINAJPUR DISTRICT, BANGLADESH

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ABSTRACT

Background: Medicinal plants are used by folk herbalists of Bangladesh. These herbalists can be considered as part-time folk medicinal practitioners. The objective of this study was to document the practices of several folk herbalists of Dinajpur district of the country. Methods: Interviews of the folk herbalists were carried out with the help of a semi-structured questionnaire and the guided field-walk method. Results: The folk herbalists used a total of 25 plants distributed into 17 families for treatment. The various diseases treated included respiratory tract disorders, lack of milk in nursing mother, burning sensations during urination or in the body, hypertension, insomnia, cataract, pain, bone fracture, gastrointestinal disorders, cancer, rheumatic fever, paralysis, skin diseases, fever, diabetes, leucorrhea, anemia, aging, heart disorders, and jaundice. Conclusion: The medicinal plants particularly used to treat hypertension, paralysis, heart disorders, diabetes, and cancer merit further attention from scientists towards discovery of potentially efficacious drugs.

KEYWORDS: Folk herbalist, medicinal plants, Dinajpur, Bangladesh.

INTRODUCTION

Folk medicine is widely practiced in Bangladesh. While such practice is mainly done by folk medicinal practitioners, otherwise known as Kavirajes, other folk medicinal practitioners practice on a part-time basis. They can be considered as folk herbalists (FH), who have
picked up knowledge on medicinal plants from diverse sources and use such plants on
patients based on empirical evidences obtained from the use of such plants. A particular FH
can be knowledgeable on the medicinal properties of a particular plant or several plants based
on years of experience or can specialize in the treatment of one or a few diseases.

The ethnomedicinal wisdom of folk herbalists can vary widely. At the same time, since folk
herbalists are quite common within Bangladesh, proper documentation of their medicinal
plant knowledge can lead to forming a comprehensive data base on the medicinal plants of
the country. The latter can prove useful to scientists and researchers in conducting further
research as well as formulating a policy on health care using indigenous sources of medicine.
As such, the objective of this study was to document the medicinal plant usage of eight FHs
in Dinajpur district, which lies in the northern part of the country.

METHODS
The names and other particulars of the eight FHs among whom the present survey was
conducted are listed below.
1. Nurjenan Begum, Kalitola village, age 52 years, female, practices for about 5 years.
2. Tofazzal Hossain, Dakshin Ramchandrapur village, age 57 years, male, practices for
   about 32 years.
3. Aminul Islam, Mahotpara village, age 57 years, male, practices for about 18 years.
4. Lipi Begum, Khamadar Bari, Mahotpara, age 30 years, female, practices for about 3
   years.
5. Merina Begum, Kanchonkolmi village, age 55 years, female, practices for about 30 years.
6. Afroza Parvin Bandana, Uttar Chaolia Patti village, age 39 years, female, practices from
   early age since the profession runs in the family.
7. Nosira Begum, Khamadar Bari, Mahotpara village, age 60 years, female, practices for
   about 10 years.
8. Ojifa Khatun, Paglar Mor, Ramnagar village, age 40 years, female, practices for about 12
   years.

Prior informed consent was initially obtained from the FHs. The FHs were informed as to the
nature of our visit and consent obtained to disseminate any information provided including
their names both nationally and internationally. Actual interviews were conducted in the
Bengali language, which was spoken fluently by the FHs 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\cite{21} and Maundu.\cite{22} In this method the FHs individually took the interviewers on guided field-walks through areas from where they collected their 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.

**RESULTS**

It can be noted that out of eight FHs in the various villages where the present survey was conducted, six were females. This is not surprising. Elderly females in villages of Bangladesh, as a matter of habit, can be seen rising early in the morning and spending considerable time for about 3-4 hours collecting plants, which are used later either as medicines or food items. The knowledge of both plants as medicines or food is passed on from one generation to the next generation of females, and with time, an elderly female can obtain considerable knowledge on the medicinal and food values of a particular plant species. It may be mentioned in this context that as a matter of rule, females take on the responsibility of both cooking meals as well as nursing patients in Bangladesh.

The eight FHs were observed to use a total of 25 plants distributed into 17 families for treatment. These plants were used to treat a number of health disorders, which included respiratory tract disorders, lack of milk in nursing mother, burning sensations during urination or in the body, hypertension, insomnia, cataract, pain, bone fracture, gastrointestinal disorders, cancer, rheumatic fever, paralysis, skin diseases, fever, diabetes, leucorrhea, anemia, aging, heart disorders, and jaundice. The results are shown in Table 1.

The number of plants given by a particular FH varied considerably. In fact, information on one plant only was given be more than one FH. This was not surprising. As mentioned earlier, FHs conduct folk medicinal practice on a part-time or irregular basis, and the extent of their plant knowledge depends on a variety of factors, such as information obtained from an earlier generation, empirical evidences gathered by the FH, a particular FH’s interest in practicing and more important, devoting time to such practices, as well as the payment made for any particular FH’s services. Also to be noted is that variability existed between the FHs in the selection of plants for treatment of any specific disease and not all FHs treated the same diseases.
Table 1. Medicinal plants used by the eight FHs of various villages in Dinajpur 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>Andrographis paniculata</em> Nees</td>
<td>Acanthaceae</td>
<td>Kalomegh</td>
<td>Leaf</td>
<td>Coughs and mucus in children. Leaf juice is orally taken regularly. (1)</td>
</tr>
<tr>
<td>2</td>
<td><em>Alternanthera philoxeroides</em> (Mart.) Griseb.</td>
<td>Amaranthaceae</td>
<td>Helencha</td>
<td>Leaf, whole plant</td>
<td>Lactagogue. Leaf or whole plant juice is orally taken by nursing mother. (6)</td>
</tr>
<tr>
<td>3</td>
<td><em>Amaranthus spinosus</em> L.</td>
<td>Amaranthaceae</td>
<td>Kanta khuria</td>
<td>Whole plant</td>
<td>Burning sensations during urination and restless feeling. Whole plant juice is taken orally with sugar on an empty stomach. (3)</td>
</tr>
<tr>
<td>4</td>
<td><em>Rauvolfia serpentina</em> (L.) Benth. ex Kurz.</td>
<td>Apocynaceae</td>
<td>Shorpogondha</td>
<td>Root, bark of root</td>
<td>Hypertension, insomnia. Root or root bark juice is orally taken. (1)</td>
</tr>
<tr>
<td>5</td>
<td><em>Tabernaemontana divaricata</em> (L.)R.Br. ex Roem. &amp; Schult.</td>
<td>Apocynaceae</td>
<td>Togor</td>
<td>Flower</td>
<td>Cataract. Flower juice is regularly applied as drops to eyes. (4)</td>
</tr>
<tr>
<td>6</td>
<td><em>Acmella oleracea</em> (L.) R.K. Jansen</td>
<td>Asteraceae</td>
<td>Roshuni</td>
<td>Flower</td>
<td>To remove foul odor from mouth, toothache. Flowers are chewed and kept inside the mouth for about 5 minutes to remove foul odor. Flowers are chewed regularly to alleviate toothache. (1)</td>
</tr>
<tr>
<td>7</td>
<td><em>Vernonia patula</em> (Dryand.) Merrill</td>
<td>Asteraceae</td>
<td>Sahadebi</td>
<td>Whole plant</td>
<td>Insomnia. Dried whole plant is kept inside the bedroom. (1)</td>
</tr>
<tr>
<td>8</td>
<td><em>Opuntia dillenii</em> (Ker-Gawl) Haw.</td>
<td>Cactaceae</td>
<td>Hij</td>
<td>Whole plant</td>
<td>Bone fracture in hand or leg. Paste of whole plant is applied topically to fractured area followed by tying the area with a piece of cloth. (5)</td>
</tr>
<tr>
<td>9</td>
<td><em>Terminalia arjuna</em> (DC.) Wight &amp; Arn.</td>
<td>Combretaceae</td>
<td>Arjun</td>
<td>Bark</td>
<td>See <em>Solanum torvum</em>. (1)</td>
</tr>
<tr>
<td>10</td>
<td><em>Jatropha curcas</em> L.</td>
<td>Euphorbiaceae</td>
<td>Shada vandar</td>
<td>Sap of stem</td>
<td>Dysentery. Sap obtained from stem is orally taken. (4)</td>
</tr>
<tr>
<td>11</td>
<td><em>Jatropha gossypifolia</em> L.</td>
<td>Euphorbiaceae</td>
<td>Lal vandar</td>
<td>Leaf, stem, seed</td>
<td>Cancer. Leaf and stem juice is orally taken</td>
</tr>
<tr>
<td>No.</td>
<td>Species</td>
<td>Family</td>
<td>Part(s)</td>
<td>Uses</td>
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<tr>
<td>12</td>
<td><em>Trewia polycarpa</em> Benth.</td>
<td>Euphorbiaceae</td>
<td>Pithali</td>
<td>Burning sensations during urination, pain. Leaf juice is orally taken. Rheumatic fever. Root juice is orally taken regularly. (7)</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td><em>Leucas aspera</em> Spreng.</td>
<td>Lamiaceae</td>
<td>Dulfì</td>
<td>Any type of pain. Whole plant juice is orally taken with camphor. (8)</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td><em>Allium cepa</em> L.</td>
<td>Liliaceae</td>
<td>Peyaj</td>
<td>See <em>Cissus quadrangularis</em>. (6)</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td><em>Allium sativum</em> L.</td>
<td>Liliaceae</td>
<td>Roshun</td>
<td>Burning sensations in the body. Roots are soaked in water followed by oral partaking of the water. (2)</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Burning sensations during urination. Roots are cut into small pieces, dried and powdered. Sherbet/pills prepared from the powder are taken orally. (2)</td>
<td></td>
</tr>
<tr>
<td>16</td>
<td><em>Asparagus racemosus</em> Willd.</td>
<td>Liliaceae</td>
<td>Shotomuli</td>
<td>Root</td>
<td></td>
</tr>
<tr>
<td>17</td>
<td><em>Stephania japonica</em> L.</td>
<td>Menispermaceae</td>
<td>Akondi, Nimuka</td>
<td>Fever, burning sensations during urination, diarrhea. Leaf and root juice is orally taken. (2)</td>
<td></td>
</tr>
<tr>
<td>18</td>
<td><em>Tinospora cordifolia</em> (Willd.) Miers</td>
<td>Menispermaceae</td>
<td>Guruncha, Gulmi lota, Guranchur, Mapata</td>
<td>Diabetes. Dried stems are powdered and taken orally. (2) Leucorrhrea. Whole plant juice is taken orally. (2) Anemia, aging. Whole plant juice is taken orally two days per week to alleviate anemia and diminish aging process. (2)</td>
<td></td>
</tr>
<tr>
<td>19</td>
<td><em>Argemone mexicana</em> L.</td>
<td>Papaveraceae</td>
<td>Akash kanta</td>
<td>Skin diseases, particularly itches. Seeds are fried in mustard oil followed by topical</td>
<td></td>
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<tr>
<td>No.</td>
<td>Plant Name</td>
<td>Family</td>
<td>Part Used</td>
<td>Additional Uses</td>
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<tr>
<td>20</td>
<td><em>Persicaria hydropiper</em> (L.) Delarbre</td>
<td>Polygonaceae</td>
<td>Bish kutuli</td>
<td>Gum from stem. Cuts and wounds. Gum is applied topically. (7)</td>
<td></td>
</tr>
<tr>
<td>21</td>
<td><em>Paederia foetida</em> L.</td>
<td>Rubiaceae</td>
<td>Gondho patali</td>
<td>Loss of appetite. Leaves are crushed into small balls, fried and taken orally. (1)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Dysentery. Leaf juice is orally taken. (1)</td>
<td></td>
</tr>
<tr>
<td>22</td>
<td><em>Solanum torvum</em> Sw.</td>
<td>Solanaceae</td>
<td>Teprai</td>
<td>Fruit, leaf, root. Diabetes. Dried fruits are taken orally in the morning and evening on a regular basis. (1)</td>
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<td></td>
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<td></td>
<td></td>
<td>Heart disorders. Root of <em>Solanum torvum</em> is combined with bark of <em>Terminalia arjuna</em> and boiled in water. The water is taken orally on a regular basis. (1)</td>
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<td></td>
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<td></td>
<td></td>
<td>Jaundice. Leaves are orally taken as vegetable in the primary stages of jaundice. (1)</td>
<td></td>
</tr>
<tr>
<td>23</td>
<td><em>Vitex negundo</em> L.</td>
<td>Verbenaceae</td>
<td>Nishinda</td>
<td>Leaf. Paralysis. Leaves are boiled in water and the water taken orally on a regular basis. (1)</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>Various types of body pain. Leaves are boiled in oil and the oil is then massaged on the painful areas. (1)</td>
<td></td>
</tr>
<tr>
<td>24</td>
<td><em>Cissus quadrangularis</em> L.</td>
<td>Vitaceae</td>
<td>Harjora, Hatjora</td>
<td>Leaf, whole plant. Bone fracture. Paste of leaves or whole plant along with paste of <em>Allium cepa</em> and <em>Allium sativum</em> bulbs and <em>Curcuma longa</em> rhizomes is topically applied to fractured area. This is done for 6-7 days. (6)</td>
<td></td>
</tr>
<tr>
<td>25</td>
<td><em>Curcuma longa</em> L.</td>
<td>Zingiberaceae</td>
<td>Holud</td>
<td>Rhizome. See <em>Cissus quadrangularis</em>. (6)</td>
<td></td>
</tr>
</tbody>
</table>

The numbers in parentheses in the last column of the Table indicates the FH from whom the information was obtained. For FH numbering, see Methods.
DISCUSSION

It may appear to a modern day scientist that the plants used by the FHs for treatment are based on plain myths or superstitions. On surface, elderly or young illiterate women or men from rural households are not supposed to know the medicinal values of plants and about treatment of diseases, some of which cannot be cured with allopathic medicine. However, a quick perusal of the scientific literature shows the actual situation to be otherwise. Andrographis paniculata was used by one FH to treat coughs and mucus in children. A randomized double-blind placebo controlled trial of this plant on 107 children have shown that children receiving the plant extract for 3 months had less incidences of common cold (which can bring on coughs and mucus) than placebo-fed children. Rauvolfia serpentina was used by another FH to treat hypertension. Clinical trials have demonstrated the efficacy of this plant in treating hypertension.

The analgesic and anti-inflammatory activities of Leucas aspera extract have been shown in albino rats and mice; notably, it was used by a FH for treatment of pain. Tinospora cordifolia was used by a FH to treat diabetes. Hypoglycemic activity of plant extract has been noted with alloxan-induced diabetic rabbits. Solanum torvum fruit was also used by a FH to treat diabetes. Methyl caffeate has been isolated from the fruit, which showed antihyperglycemic activity and antidiabetic effect in streptozotocin-induced diabetic rats. The alcoholic extract of bark of Terminalia arjuna has been shown to have cardioprotective effect in isoproterenol-induced myocardial infarction in experimental animals; the bark was used by a FH against heart disorders along with root of Solanum torvum. Cissus quadrangularis was used by a FH for healing bone fracture. The efficacy of this plant in fracture repair has been scientifically validated.

Thus even a brief review on some of the plants suggests that the FHs were quite validated from the scientific point of view about the therapeutic uses of those plants. It would be interesting to conduct more studies, particularly on plants used by the FHs to treat diabetes, cancer, hypertension, heart disorders, and paralysis, for these diseases are incurable or costly to cure by allopathic medicine. For these diseases, traditional medicinal systems and the plants they use (like the plants used by the FHs) can be a better and more economical way for treatment and can also be a source for newer and more efficacious allopathic drugs if researched upon and the bioactive component(s) isolated and identified.
CONCLUSION
The plants used by the FHSs to treat diabetes, cancer, hypertension, heart disorders and paralysis are of special interest for further scientific research. Any novel and efficacious drug discovery from the plants used to treat these ailments can benefit people from alleviation of these ailments, as well as provide a cheap and readily available source for these drugs. It is also of interest to determine whether drugs in the form of crude extracts of these plants perform better in real life situations than any isolated constituent.

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

REFERENCES


