ETHNOMEDICINAL PLANTS OF THE SHING TRIBE OF MOULVIBAZAR DISTRICT, BANGLADESH

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ABSTRACT

Background. Documentation of indigenous medicinal practices has resulted in the discovery of a number of important allopathic drugs. The objective of this study was to document the ethnomedicinal practices of tribal healers of the Shing tribe residing in Moulvibazar district, Sylhet Division, Bangladesh. Methods. Interviews of the tribal healers were carried out with the help of a semi-structured questionnaire and the guided field-walk method. Results. Altogether 15 plants distributed into 11 families were observed to be used by the tribal healers. These plants were used for treatment of pain, gastrointestinal disorders, respiratory tract disorders, skin disorders, and infertility in women. A review of the scientific literature showed that the use of a number of plants can be justified on the basis of available scientific reports on pharmacological activities of the plants. Conclusion. The plants used by the Shing tribal healers merit further scientific studies towards discovery of potentially efficacious bioactive compounds from the plants.

KEY WORDS: Shing tribe, indigenous medicine, Moulvibazar district, Bangladesh.

INTRODUCTION

Human beings have possibly suffered from ailments since their advent and have used plants for treatment of their ailments since time immemorial. It has been reported that even around some 3000 years B.P., human beings were aware of the medicinal properties of plants. [1] Balick and Cox [2] observed that a number of important modern pharmaceuticals have been derived from, or are plants used by indigenous people. Modern drugs like aspirin, atropine,
Ephedrine, digoxin, morphine, quinine, reserpine and tubocurarine are examples, which were originally discovered through observations of traditional cure methods of indigenous peoples. The Indian sub-continent is known for its rich traditional practices with Ayurveda, Unani and Siddha being among the established traditional practices, which are flourishing even in modern times. Folk and tribal medicinal practices can also be counted among the medicinal practices present in the Indian sub-continent countries. All these practices have in common the use of medicinal plants in their treatment methods.

Recent estimates have put the number of tribes in Bangladesh to be well over a hundred. Apart from a few large tribes like the Chakmas, Garos, Santals, Khasias and Manipuris, the other tribes are small and continuously in danger of being assimilated within the mainstream Bengali-speaking population, or being influenced by modern development and so losing their individual rituals and practices. These include their traditional medicinal practices as well. Much valuable knowledge will be lost if the tribes give up on their medicinal practices, for long acquaintance with the plant species in the forests where they live have given tribal healers an intimate knowledge of the properties of medicinal plants that they have used for centuries. Appropriate documentation of this knowledge is necessary, for the modern age is also witnessing the emergence of new diseases (AIDS, Ebola, antibiotic-resistant microbial diseases) and the rise of drug-resistant vectors. Plant kingdom may prove vital in discovering new drugs, which can effectively combat these new diseases as well as old diseases against which existing drugs do not work effectively. A case in point is the case of malaria, which used to be previously treated with a plant-derived product, namely quinine. Emergence of quinine-resistant Plasmodium strains led to searches, which resulted in another plant-derived anti-malarial product, namely artemisinin. Notably, both drugs are plant-derived.

Towards a comprehensive documentation of the medicinal plants of the country and existing traditional medicinal practices, we had been conducting ethnomedicinal surveys among both tribal as well as mainstream traditional medicinal practitioners for a number of years. A number of the smaller tribes (total tribal population numbering less than 200 individuals) reside and work in the various tea estates of Sylhet Division in Bangladesh. The traditional medicinal practices of these tribes remain undocumented and are on the verge of disappearing. The objective of the present study was to conduct an ethnomedicinal survey among two clan healers of the Shing tribe working in a tea estate in Kamalganj of Moulvibazar district, Sylhet Division, Bangladesh.
METHODS

The Shing tribe residing in Kamalgang worked at a tea estate in the area. The adult members worked in plucking leaves from tea plants, and as agricultural laborers where they tended to maintenance and cultivation of the plants. The tribe had two tribal medicinal practitioners (TMPs). TMP 1 was named Satya Narayan Shing, and belonged to the Kocchop clan of the tribe. TMP 2 was named Santosh Shing, and belonged to the Shandil clan of the tribe. Both TMPs were male. Prior Informed Consent was first obtained from both TMPs. They were thoroughly 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 both TMPs as well as the interviewers. The interviews were conducted with the help of a semi-structured questionnaire and the guided filed-walk method of Martin [15] and Maundu. [16] In this method the TMPs 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

The Two TMPs, in between themselves, mentioned that they use a total of 15 plants in their various formulations for disease treatment. These plants were distributed into 11 families and used for treatment of pain, gastrointestinal disorders, respiratory tract disorders, skin disorders, and infertility in women. The number of diseases treated as well as the numbers of plants used were not many, suggesting that possibly much of the traditional knowledge has got lost. The results are shown in Table 1. Each TMP was interviewed separately, and the plants marked accordingly as [1] or [2] in the last column of Table 1 as to the TMP source.

The formulations were fairly simple, although in some formulations multiple plants or plant parts were used. Treatment was either oral or topical application of the plant or plant part. Interestingly, the TMPs, though belonging to the same tribe, treated different diseases with different plants. In several cases, the plants used and the afflictions treated were the same, but the mode of administration of formulation was different. For instance, itch was treated by TMP 1 by oral administration of leaf juice of *Azadirachta indica*, but TMP 2 advised boiling the leaves in water followed by taking a bath in the water. Pain was treated by both TMP 1
and 2 with *Datura metel* and *Curcuma longa*. However, TMP 1 advised joint application of leaves of *Datura metel* and rhizomes of *Curcuma longa* topically over the painful area, while TMP 2 advised topical application of paste of *Curcuma longa* rhizomes followed by covering the painful area with *Datura metel* leaves. The formulations suggest that marked differences exist in the selection of plants used and diseases treated by TMPs as well as folk medicinal practitioners (Kavirajes), which is in accordance with findings in our previous studies. [4-14] This also highlights the importance of conducting ethnomedicinal surveys among as many TMPs and Kavirajes of Bangladesh to get a full idea of the potentialities of any given plant in the treatment of multiple diseases.

Table 1. Medicinal plants and formulations of the Shing tribal healers

<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>Adhatoda vasica</em> Nees.</td>
<td>Acanthaceae</td>
<td>Shada bashok</td>
<td>Leaf</td>
<td>See <em>Euphorbia pulcherrima</em> (2).</td>
</tr>
<tr>
<td>2</td>
<td><em>Borassus flabellifer</em> (L.)</td>
<td>Arecaeeae</td>
<td>Tal</td>
<td>Sap</td>
<td>See <em>Terminalia arjuna</em>. (2)</td>
</tr>
<tr>
<td>3</td>
<td><em>Calotropis gigantea</em> (L.) R. Br.</td>
<td>Asclepiadaceae</td>
<td>Akon</td>
<td>Leaf</td>
<td>Pain. Warm leaves are applied to painful areas. (2)</td>
</tr>
<tr>
<td>4</td>
<td><em>Terminalia arjuna</em> (DC.) Wight &amp; Arn.</td>
<td>Combretaceae</td>
<td>Arjun</td>
<td>Bark</td>
<td>Acidity, stomach pain. Bark of <em>Terminalia arjuna</em> is mixed with fruits of <em>Terminalia bellirica</em> and <em>Terminalia chebula</em>, and crystalline sugar obtained from sap of <em>Borassus flabellifer</em>. The mixture is crushed to obtain juice, which is taken orally once in the morning. Note that fresh juice has to be used every time. (2)</td>
</tr>
<tr>
<td>5</td>
<td><em>Terminalia bellirica</em> (Gaertn.) Roxb.</td>
<td>Combretaceae</td>
<td>Bohera</td>
<td>Fruit</td>
<td>See <em>Terminalia arjuna</em>. (2) Dysentery, stomach pain. Dried fruits are soaked in one cup water followed by drinking the water on an empty stomach for 1-2 days. During this time, flattened rice has to be taken as meal. (2)</td>
</tr>
<tr>
<td>6</td>
<td><em>Terminalia chebula</em> (Gaertn.) Retz.</td>
<td>Combretaceae</td>
<td>Horitoki</td>
<td>Fruit</td>
<td>See <em>Terminalia arjuna</em>. (2) Toothache, body pain from skin diseases. One fruit is taken once daily orally. Over-dose can lead to decreased eyesight and dizziness. (2)</td>
</tr>
<tr>
<td>7</td>
<td><em>Euphorbia</em></td>
<td>Euphorbiaceae</td>
<td>Sid pata</td>
<td>Leaf</td>
<td>Coughs and mucus in lactating children aged from 1-5 years. Juice obtained from</td>
</tr>
<tr>
<td>No.</td>
<td>Taxon Name</td>
<td>Family</td>
<td>Part Used</td>
<td>Action(s)</td>
<td></td>
</tr>
<tr>
<td>-----</td>
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</tr>
<tr>
<td>8</td>
<td><em>Hyptis suaveolens</em> (L.) Poit.</td>
<td>Lamiaceae</td>
<td>Tokma</td>
<td>Fruit</td>
<td>To give strength. Dried fruits are soaked in water. The water is then taken orally with sugar in the form of sherbet.</td>
</tr>
<tr>
<td>9</td>
<td><em>Leucas aspera</em> (Willd.) Link.</td>
<td>Lamiaceae</td>
<td>Gol kuchi, Goom shak</td>
<td>Leaf</td>
<td>Bloating, indigestion, constipation, blood purifier. Macerated leaves are mixed with ghee (clarified butter; pills made from the mixture are taken orally. Alternately, young leaves are chewed and taken orally. The medication is taken for 1-2 days and milk should be taken about 10 minutes following medication. The medication is also applicable for the above problems in cattle.</td>
</tr>
<tr>
<td>10</td>
<td><em>Ocimum tenuiflorum</em> L.</td>
<td>Lamiaceae</td>
<td>Tulsh</td>
<td>Leaf</td>
<td>See <em>Euphorbia pulcherrima</em> (2).</td>
</tr>
<tr>
<td>11</td>
<td><em>Azadirachta indica</em> A. Juss.</td>
<td>Meliaceae</td>
<td>Neem</td>
<td>Leaf</td>
<td>Blood poisoning, itches, eczema. Leaf juice is orally taken for 3-4 days. Milk must be taken along with otherwise there will be loss of eyesight. Helminthic infections in children, itches. Pills prepared from crushed leaves are taken orally for helminthiasis. For itches, leaves are boiled in water followed by taking a bath in the water.</td>
</tr>
<tr>
<td>12</td>
<td><em>Scoparia dulcis</em> L.</td>
<td>Scrophulariaceae</td>
<td>Josthi modhu</td>
<td>Root</td>
<td>Stomach pain, lower abdominal pain. Roots are orally taken.</td>
</tr>
<tr>
<td>13</td>
<td><em>Datura metel</em> L.</td>
<td>Solanaceae</td>
<td>Shada dhutura</td>
<td>Leaf</td>
<td>Pain. Leaves of <em>Datura metel</em> are warmed and applied with paste of rhizomes of <em>Curcuma longa</em> to affected areas. If there is pain following delivery, leaves are wrapped in a piece of cloth, warmed and tied to the waist.</td>
</tr>
<tr>
<td>14</td>
<td><em>Grewia microcos</em> L.</td>
<td>Tiliaceae</td>
<td>Aysha fol</td>
<td>Root</td>
<td>Infertility in women. Roots are plucked on a Saturday or Tuesday and tied around the throat.</td>
</tr>
<tr>
<td>15</td>
<td><em>Curcuma longa</em> L.</td>
<td>Zingiberaceae</td>
<td>Holud</td>
<td>Rhizome</td>
<td>See <em>Datura metel</em>. Pain in any part of the body. Paste of <em>Curcuma longa</em> rhizome is topically applied followed by covering the area with leaves of <em>Datura metel</em>.</td>
</tr>
</tbody>
</table>

Numbers in parentheses in the last column indicate the TMP (as mentioned in Materials and Methods).
DISCUSSION

It was of interest to determine whether the plants used by the TMPs for treatment had any scientific basis (even though the TMPs may not be aware of the scientific basis) or were plants just chosen at random. The former would imply that the selections of plants used for treatment by TMPs were based on empirical evidence, even though the evidence may not have been obtained by the TMP himself or herself. Tribal and folk medicinal knowledge is usually generational, being continuously acquired and passed along from generation to generation to a close member of the family. Towards determining the scientific validity of the plants used, scientific literature searches were made in PubMed, SCOPUS and Google Scholar databases. *Terminalia arjuna*, *Terminalia bellirica*, and *Terminalia chebula* were used in combination to treat stomach pain and acidity. Interestingly, in Ayurveda, *T. bellirica* and *T. chebula* are used for digestive disorders. *T. arjuna* bark is primarily used for cardiovascular disorders in Indian traditional medicine; the cardioprotective effects of the bark has been scientifically established. [17] Hence, the use of bark for treatment of gastrointestinal disorders like acidity and stomach pain (the latter can also be a consequence of acidity) appears to be a novel use of the bark by the TMP and suggests that the bark may be studied further for scientific validation of such use.

*Calotropis gigantea* leaf was used by TMP 2 to treat pain. Analgesic and anti-inflammatory activities have been reported for ethanolic extract of leaves of the plant. [18] Fruits of *T. bellirica* were used by TMP 2 for treatment of stomach pain. While such pain may arise from a variety of causes, scientific studies have shown that the fruits of this plant have analgesic potential. [19] pain relieving activity has been reported for fruits of both *T. bellirica* and *T. chebula*; [20] thus the use of fruits of *T. chebula* by TMP 2 for toothache and body pain appears to be scientifically validated. *Ocimum tenuiflorum* and *Adhatoda vasica* were used with *Euphorbia pulcherrima* by TMP 2 to treat coughs. The anti-tussive action of *Ocimum tenuiflorum* and *Adhatoda vasica* has been shown. [21, 22] The use of *E. pulcherrima* is unique for treatment of coughs and mucus and deserves scientific attention. The same is the case with Leucas aspera, used by TMP 1 to treat gastrointestinal disorders like bloating, indigestion, and constipation.

The use of *Azadirachta indica* leaves for skin disorders by TMP 1 and for helminthic infections and itches by TMP 2 also has scientific validations [23, 24] *Scoparia dulcis* was used by TMP 2 to treat stomach and lower abdominal pain. The analgesic and anti-inflammatory
properties of extract of the plant has been reported. [25] Leaves of *Datura metel* and rhizomes of *Curcuma longa* were used by both TMPs 1 and 2 to treat pain. Analgesic activity has been reported for both plants. [26, 27]

Taken together, most of the plants used by the TMPs of the Shing tribe can be seen to be scientifically validated in their uses, which demonstrates the medicinal plant knowledge of the TMPs. In several cases, the use of the plants by the TMPs seems to be unique. Besides *E. pulcherrima* and *T. arjuna* as mentioned above, the use of *Grewia microcos* to treat infertility in women also seems to be unique. These plants merit further scientific studies. Also, although a number of plants were used by the TMPs to treat pain, pain is a common affliction affecting human beings, and a more available and affordable analgesic drug, if discovered from the plants, can be beneficial to human beings because over-the-counter analgesic drugs like aspirin or paracetamol can produce adverse effects like gastric ulceration or hepatotoxicity.

**CONCLUSION**

This is the first documented instance, to our knowledge of the medicinal practices of traditional healers of the Shing tribe. The plants used by the Shing healers, for the most part, can be scientifically validated in their uses and can be further studied towards discovery of new drugs.

**CONFLICTS OF INTEREST**

The author(s) declare that they have no competing interests.

**REFERENCES**


