ORIGINAL ARTICLE

Medicinal plants and formulations of the Bongshi tribe of Bangladesh


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ABSTRACT

The Bongshi tribe is one of the smallest tribes of Bangladesh and just inhabits two adjacent villages in Tangail district of the country, namely, Mahanandapur and Donodina. An ethnomedicinal survey was carried out among the healers of the tribe. Interviews were conducted with the help of a semi-structured questionnaire and the guided field-walk method. It was observed that the Bongshi healers used a total of 44 plant species for treatment of a diverse variety of ailments. Although most of the ailments were common ailments, the Bongshi healers used several plants for treatment of diabetes, a disease which cannot be cured with modern medicine. As such, the plants used by the Bongshi healers for treatment of diabetes merit special scientific studies for their possible curative effects. The Bongshi healers also used several plants for treatment of pain. The common pain killing drugs like aspirin and paracetamol have side-effects like gastric ulceration and hepatotoxicity resulting from prolonged use of these drugs. As such, scientific studies needs to undertaken on the plants mentioned by the healers towards the development of more efficacious drugs. Several plants used by the healers have been validated by scientific findings on their relevant pharmacological activities.

Key words: Asian medicine, CAM, ethnomedicine, alternative therapy

Introduction

The Bongshi tribe is one of the smallest tribes of Bangladesh and just inhabits two adjacent villages in Tangail district of the country, namely, Mahanandapur and Donodina. In fact, since these two villages are adjacent and inhabited exclusively by the Bongshis, the tribe considers Donodina as part of Mahanandapur. They also call themselves ‘Surya-Bongshi’, meaning descendants from the Sun (Murmu, 2009). They also follow closely the Hindu religion, and claim themselves to belong to the Khatriyas, i.e. belonging to the warrior caste. However, according to their mythology, they ran away into dense forest areas during the great war of Kurukhettra, as described in the ancient Indian epic, the Mahabharata. Bongshis believe that they have come to their present habit from Kan Kamakhya in Orissa province of India following wars and persecution by other tribes and the mainstream people. No Government statistics exist about their actual numbers; their Headman or ‘Pradhan’ estimates the total population of the two villages as not more than 5,000.

Bongshis are of medium height, well-built, and with a dark but lustrous complexion. The males invariably take the title of ‘Barman’. Anthropologists believe that they may be a minor off-shoot of the Koch tribe because of the Barman title; however, Bongshis totally deny that they are related to the Koch tribe. The economic status of the tribe is poor. When the survey was conducted, it was noticed that all Bongshi families owned no land except the piece of ground where they have built their small homesteads. The adjoining land was totally owned by the mainstream Bengali-speaking population, and where the Bongshi males worked as agricultural laborers during the cultivation and harvesting period of crops. From the Bengali months of Kartik (mid-October to mid-November) to Jaistha (mid-May to mid-June), men, women and even children engage themselves in making bamboo mats, which they sell at local village markets. Their poverty makes them illiterate and compels them to live under sub-standard conditions without proper access to schools, medical facilities, or other amenities of modern life.

The Bongshis are looked down upon by the mainstream population, who regard them as too poor to socialize with. As a consequence, the Bongshis keep to themselves. Any religious or social festivals are conducted in a small manner within the village(s) and attended by only tribal members. Lack of food, hunger, and consequent malnutrition is a common feature among the tribal people. Since they cannot afford allopathic
doctors and modern medicines, they still are dependent on their traditional medicinal practitioners known as ‘Vaidyas’ to administer to their medicinal needs. The Vaidyas in turn rely on medicinal plants as the chief ingredient in their formulations. Although their traditional medicinal knowledge probably extends back centuries, nobody has till now attempted to document their traditional medicinal practices. This is unfortunate, because such centuries-old knowledge about medicinal plants can form a rich source of knowledge and potentially lead to discovery of new medicines, precisely because the plants have been used for centuries, with apparently good results and patient satisfaction by the Bongshi traditional medicinal practitioners (TMPs).

Plants form the mainstay of many traditional medicinal practices of indigenous communities. Close observations of these indigenous medicinal practices have lead to the discovery of many modern and efficacious drugs like quinine, artemisinin, reserpine, digoxin, vincristine, vinblastine and taxol, to name only a few (Balick and Cox, 1996; Gilani and Rahman, 2005). With the advent of modern civilization, many indigenous tribes are disappearing because of either assimilation with the mainstream people, or being unable to cope with the challenges of modern life along with the introduction of diseases through contact with other people, diseases against which tribal people has developed little or no resistance. Bangladesh has nearly 200 tribal or indigenous communities, but with the exception of about a dozen tribes, the rest are on the verge of extinction or assimilation. Since the TMPs of these tribes have developed their medicinal knowledge on plants through practice, and such medicinal plant knowledge has been enriched by successive generations of TMPs, modern medicine and human beings may have to suffer if their medicinal plant knowledge is irretrievably lost. For the last few years we had been systematically conducting ethnomedicinal surveys, particularly among the small tribes of the country, who are on the verge of extinction or losing their medicinal knowledge (Rahmatullah et al, 2009; Rahmatullah et al, 2010a,b; Seraj et al, 2011; Rahmatullah et al, 2011; Rahmatullah et al, 2012a,b,c). The objective of the present study was to document the medicinal plants and formulations of the surviving TMPs of the Bongshi tribe.

Materials and Methods

This ethnomedicinal survey was conducted during 2011. The Bongshis proved to be friendly people, when contacted. Full and informed consent was obtained from the Pradhan and the TMPs of the tribe, who were informed of the purpose of our survey. We were both assured and received full cooperation from the TMPs, Pradhan, tribal elders and the general population. In fact, the Bongshis arranged living places for us to stay in when we made periodic trips to their two villages. Informal consent was obtained to disseminate the information obtained in national or international publications. Further consent was obtained to take pictures of tribal people and the medicinal plants and to publish such pictures.

Three practicing TMPs were present within the tribe. They were Siddheswar Barman, Jagadish Barman, and Govinda Barman. All of them were males and they consented to have their names published. At their request, they were interviewed as a group and spoke as a group. We did not observe any differences among them when they told us about the medicinal plants and the ailments treated, which suggested that the Bongshis, probably because of the small number of practitioners, had a fairly homogenous knowledge on the medicinal plants that they used.

Actual interviews were conducted in Bengali. Bengali was the language spoken by the interviewers. The Bongshis had a fluent grasp of the Bengali language, particularly the Pradhan. Occasionally some words crept in, which appeared to be Bongshi variations of the Bengali language, but such words were explained by the Pradhan. Interviews were conducted with the help of a semi-structured questionnaire and the guided field-walk method of Martin (1995) and Maundu (1995). In this method, the TMPs took the interviewers through guided walks through areas from where they collected their medicinal plants, showed the plants, and described their uses. Plant specimens were photographed, collected and dried and brought back to Dhaka for identification by Mr. Manjur-Ul-Kadir Mia, ex-Curator and Principal Scientific Officer of the Bangladesh National Herbarium. Voucher specimens were deposited with the Medicinal Plant Collection Wing of the University of Development Alternative, where plant identification was doubly checked by a trained botanist from the University.

Results and Discussion

The medicinal plants and formulations used by the Bongshi TMPs are shown in Table 1. Overall, the ailments treated were simple, being common ailments like pain, fever, jaundice, hemorrhoids, helminthiasis, respiratory problems like asthma, skin diseases, gastrointestinal disorders, leucorrhea, spermatorrhea, eye diseases, vomiting tendency, burning sensations during urination, or bone fracture. It is to be noted that most of the above ailments have to do with sub-standard conditions of living coupled with hard work, and getting less than the recommended amounts of their nutritional needs. It is noteworthy that the Bongshi TMPs used 14 different formulations for treatment of various types of pain, including body pain, rheumatic pain, and headache. The chronic shortage of food along with hard work probably led to various body pains and an early aging tendency.
of the people leading to development of rheumatism and rheumatic pain. Five formulations were used for leucorrhea, which corresponded with the unhygienic conditions of living, poor sanitary facilities, and lack of quality drinking water. However, the TMPs also treated diabetes with three formulations. Diabetes cannot be completely cured with modern allopathic medicine, which only gives symptomatic relief. The Bongshi TMPs, in the absence of any clinical diagnostic procedures, diagnosed diabetes from the sugary taste and smell of urine and the frequency of urination. In fact, the Bongshi term for diabetes is the same as the Bengali term of ‘bohu mutra’, bohu meaning much or many, and mutra meaning urine.

**Table 1**: Medicinal plants and formulations of the Bongshi tribe of Bangladesh.

<table>
<thead>
<tr>
<th>Serial Number</th>
<th>Scientific Name</th>
<th>Family Name</th>
<th>Local Name</th>
<th>Utilized Part</th>
<th>Ailment(s) and formulation(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Andrographis paniculata (Burm. F.) Wall. ex Nees</td>
<td>Acanthaceae</td>
<td>Kalomegh</td>
<td>Leaf, stem</td>
<td>Fever, constipation. Leaves and stems are soaked in water followed by drinking of the water.</td>
</tr>
<tr>
<td>2</td>
<td>Echolium linneanum Kurz.</td>
<td>Acanthaceae</td>
<td>Vandor</td>
<td>Leaf, root</td>
<td>Severe pain, joint pain. Leaves and roots of <em>Echolium linneanum</em> are mixed with whole plants of <em>Parthenocissus quinquefolia</em> (L.) Planch. (Vitaceae), and tubers of <em>Colocasia nympheifolia</em> Vent. (Araceae), and macerated to obtain juice. The juice is massaged onto painful areas.</td>
</tr>
<tr>
<td>3</td>
<td>Justicia gendarussa L.</td>
<td>Acanthaceae</td>
<td>Bish jhar</td>
<td>Root</td>
<td>Rheumatic pain. Macerated roots are applied to affected areas.</td>
</tr>
<tr>
<td>4</td>
<td>Achyranthes aspera L.</td>
<td>Amaranthaceae</td>
<td>Ubud nangra, Bilai achra</td>
<td>Root</td>
<td>Stomach pain, flatulence. Macerated roots are mixed with mustard oil and massaged around the navel.</td>
</tr>
<tr>
<td>5</td>
<td>Aerva sanguinolenta (L.) Blume</td>
<td>Amaranthaceae</td>
<td>Bish kata</td>
<td>Leaf</td>
<td>Bleeding from cuts and wounds. Juice obtained from crushed leaves is applied to cuts and wounds to stop bleeding.</td>
</tr>
<tr>
<td>6</td>
<td>Amaranthus spinosus L.</td>
<td>Amaranthaceae</td>
<td>Khuira kanta</td>
<td>Root</td>
<td>Red color of urine. Macerated roots of <em>Amaranthus spinosus</em> are taken with water and mishri* (crystalline sugar) twice daily for 3 days. Alternately, macerated roots are taken with talmakhna [seeds of <em>Asteracantha longifolia</em> (L.) Nees. (Acanthaceae)].</td>
</tr>
<tr>
<td>7</td>
<td>Curculigo orchioides Gaertn.</td>
<td>Amaryllidaceae</td>
<td>Tejbol</td>
<td>Root</td>
<td>Weakness, diabetes. Macerated roots are taken with water.</td>
</tr>
<tr>
<td>8</td>
<td>Corypha umbraculifera Jacq.</td>
<td>Aracaceae</td>
<td>Tal bindu</td>
<td>Whole plant</td>
<td>Loss of strength. Macerated whole young plants are taken with water.</td>
</tr>
<tr>
<td>9</td>
<td>Aristolochia indica L.</td>
<td>Aristolochiaceae</td>
<td>Ishwarmul</td>
<td>Leaf</td>
<td>Pain, contact with a snake (known as getting the wind from a snake or in Bengali as “shaper batash”). Crushed leaves are applied onto painful areas. Crushed leaves are taken with juice obtained from crushed ginger for a day.</td>
</tr>
<tr>
<td>10</td>
<td>Hemidesmus indicus R. Br.</td>
<td>Asclepiadaceae</td>
<td>Onontomul</td>
<td>Rhizome</td>
<td>Spermatorrhea. Pills prepared from crushed rhizomes are taken for 10-20 days.</td>
</tr>
<tr>
<td>11</td>
<td>Chromolaena odorata (L.) R. M. King &amp; H. Rob.</td>
<td>Asteraceae</td>
<td>Fulhuri</td>
<td>Leaf</td>
<td>Bleeding from cuts or wounds in hand or leg. Juice obtained from crushed leaves is applied to stop bleeding.</td>
</tr>
<tr>
<td>12</td>
<td>Cleome viscosa L.</td>
<td>Capparaceae</td>
<td>Fulota</td>
<td>Whole plant</td>
<td>Severe pain, ear ache. Whole plant is crushed with hand and applied to painful areas.</td>
</tr>
<tr>
<td>13</td>
<td>Terminalia arjuna (Roxb. ex DC.) Wight &amp; Arn.</td>
<td>Combretaceae</td>
<td>Arjun</td>
<td>Bark</td>
<td>Spermatorrhea. Bark is prepared as a halwa (cooked paste) and taken for 7-10 days.</td>
</tr>
<tr>
<td>14</td>
<td>Costus speciosus (J. König.) Sm.</td>
<td>Costaceae</td>
<td>Kao kola</td>
<td>Rhizome</td>
<td>Spermatorrhea (symptoms: whitish color of urine, low sperm density). Juice obtained from macerated rhizomes is mixed with mishri (crystalline sugar).</td>
</tr>
<tr>
<td>No.</td>
<td>Species</td>
<td>Family</td>
<td>Common Name</td>
<td>Part Used</td>
<td>Indication</td>
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<tr>
<td>15</td>
<td>Croton tiglium L.</td>
<td>Euphorbiaceae</td>
<td>Jaipal</td>
<td>Seed</td>
<td>Constipation. Pills made from seeds are orally taken.</td>
</tr>
<tr>
<td>16</td>
<td>Euphorbia hirta L.</td>
<td>Euphorbiaceae</td>
<td>Laal mina gach</td>
<td>Whole plant</td>
<td>Asthma, respiratory difficulties. Pills made from macerated whole plants are taken twice daily for 1 month.</td>
</tr>
<tr>
<td>17</td>
<td>Mimosa pudica L.</td>
<td>Fabaceae</td>
<td>Laal lojaboti</td>
<td>Root</td>
<td>Weakness and/or diarrhea in children. Roots are tied to the hand or leg on a Tuesday or Saturday.</td>
</tr>
<tr>
<td>18</td>
<td>Saraca asoca (Roxb.) De Wilde.</td>
<td>Fabaceae</td>
<td>Ashok</td>
<td>Bark</td>
<td>Hemorrhoids. Pills made from macerated bark are orally administered.</td>
</tr>
<tr>
<td>19</td>
<td>Tamarindus indica L.</td>
<td>Fabaceae</td>
<td>Tetul</td>
<td>Young leaf, stem</td>
<td>Burning sensations during urination. Juice obtained from macerated young leaves and stems is taken.</td>
</tr>
<tr>
<td>20</td>
<td>Vigna trilobata (L.) Verdc.</td>
<td>Fabaceae</td>
<td>Bon kalai</td>
<td>Root</td>
<td>Jaundice. Pills prepared from root paste are taken.</td>
</tr>
<tr>
<td>21</td>
<td>Anisomeles indica (L.) Kuntze</td>
<td>Lamiaceae</td>
<td>Bhanuka kaji</td>
<td>Leaf, root</td>
<td>Severe pain, rheumatic pain, paralysis. Macerated leaves and roots are applied to affected areas.</td>
</tr>
<tr>
<td>22</td>
<td>Hyptis suaveolens (L.) Poit.</td>
<td>Lamiaceae</td>
<td>Tokma gach</td>
<td>Seed</td>
<td>Leucorrhoea in women, low sperm density in men. Seeds are soaked in water in the evening. The following morning, the seeds along with the water are mixed with sugar and taken for 7 days.</td>
</tr>
<tr>
<td>23</td>
<td>Leucas aspera (Willd.) Link</td>
<td>Lamiaceae</td>
<td>Dum kolosh</td>
<td>Leaf, root</td>
<td>Pain in one side of the head, helminthiasis. Juice obtained from macerated leaves is mixed with water and applied to the painful part of the head for two consecutive days. Pills made from roots are taken for 10-12 days for helminthiasis.</td>
</tr>
<tr>
<td>24</td>
<td>Ocimum tenuiflorum L.</td>
<td>Lamiaceae</td>
<td>Tulsi</td>
<td>Leaf, stem</td>
<td>Respiratory difficulties in children due to catching cold. Juice obtained from macerated leaves and stems is orally administered.</td>
</tr>
<tr>
<td>25</td>
<td>Salvia plebeia R.Br.</td>
<td>Lamiaceae</td>
<td>Hath mutha</td>
<td>Leaf, root</td>
<td>Leucorrhoea. Juice obtained from macerated roots is mixed with sugarcane molasses. ½ cup of this juice is taken twice daily in the morning and evening for 21 days. Constipation. Juice obtained from macerated leaves is mixed with water and taken.</td>
</tr>
<tr>
<td>26</td>
<td>Litsea monopetala (Roxb.) Pers.</td>
<td>Lauraceae</td>
<td>Khara jore</td>
<td>Leaf, bark</td>
<td>Chronic severe fever. Leaves and barks are soaked in water overnight. The following morning, the water is mixed with molasses and taken on an empty stomach. This is continued for a month.</td>
</tr>
<tr>
<td>27</td>
<td>Leea macrophylla Roxb.</td>
<td>Leeaceae</td>
<td>Hath polash</td>
<td>Rhizome</td>
<td>Severe pain. Macerated rhizomes are massaged onto painful areas.</td>
</tr>
<tr>
<td>28</td>
<td>Asparagus racemosus Wild.</td>
<td>Liliaceae</td>
<td>Shotolai</td>
<td>Rhizome</td>
<td>Burning sensations during urination, weakness. Rhizomes are taken orally.</td>
</tr>
<tr>
<td>29</td>
<td>Lawsonia inermis L.</td>
<td>Lythraceae</td>
<td>Mehedi</td>
<td>Leaf</td>
<td>Severe pain. Juice obtained from a combination of macerated leaves of Lawsonia inermis, Datura metel and Justicia gendarussa is applied to painful areas twice daily for 7 days. Note that during this time, beef, eggs, duck meat and fish eating is prohibited.</td>
</tr>
<tr>
<td>30</td>
<td>Azadirachta indica A. Juss.</td>
<td>Meliaceae</td>
<td>Neem gach</td>
<td>Young leaf</td>
<td>Skin diseases, allergy. Crushed young leaves are applied to</td>
</tr>
<tr>
<td>No.</td>
<td>Scientific Name</td>
<td>Family</td>
<td>Part Used</td>
<td>Application</td>
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</tr>
<tr>
<td>31</td>
<td>Stephania japonica (Thunb.) Miers</td>
<td>Menispermaceae</td>
<td>Leaf, root, whole plant</td>
<td>Leucorrhrea. Leaves are sliced and soaked in water where the leaf juice forms a thick gel in water. This juice is taken orally.</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Pain. Roots are collected during the Bengali month of Bhadra (mid-August to mid-September) on any Saturday or Tuesday. They are then tied to painful areas with rotten stems of mambhagne jute [Corchorus olitorius L. (Tiliaceae)], which have been dried. Bone fracture. Macerated roots are applied to fractured area. Diabetes, fever in children. Pills made from macerated whole plant are taken for a month for diabetes. Pills are orally administered to children till fever is reduced.</td>
<td></td>
</tr>
<tr>
<td>32</td>
<td>Ficus racemosa L.</td>
<td>Moraceae</td>
<td>Bark, seed, sap</td>
<td>Weakness, eye diseases. Sap is taken orally for weakness and applied topically to eyes for eye diseases. Weakness. A decoction of seeds and barks is taken. Diabetes. Seeds are cooked and eaten as vegetable.</td>
<td></td>
</tr>
<tr>
<td>33</td>
<td>Streblus asper Lour.</td>
<td>Moraceae</td>
<td>Leaf</td>
<td>Leucorrhrea in women, low sperm density in men. Leaves are soaked in water in the evening. The following morning, the leaves are squeezed to obtain juice, which is mixed with sugar and taken for 7 days.</td>
<td></td>
</tr>
<tr>
<td>34</td>
<td>Plumbago zeylanica L.</td>
<td>Plumbaginaceae</td>
<td>Leaf, whole plant</td>
<td>Chronic fever. Juice obtained from leaves or whole plants is orally taken.</td>
<td></td>
</tr>
<tr>
<td>35</td>
<td>Drynaria quercifolia (L.) J. Smith</td>
<td>Polypodiaceae</td>
<td>Rhizome</td>
<td>Leucorrhrea in women. Pills made from sliced rhizomes are taken with warm water for 5-7 days.</td>
<td></td>
</tr>
<tr>
<td>36</td>
<td>Paederia foetida L.</td>
<td>Rubiaceae</td>
<td>Leaf</td>
<td>Tooth ache. Ashes from burnt leaves are used to brush teeth.</td>
<td></td>
</tr>
<tr>
<td>37</td>
<td>Glycosmis pentaphylla (Retz.) Corr.</td>
<td>Rutaceae</td>
<td>Young leaf</td>
<td>Severe pain. Crushed leaves are massaged onto painful areas.</td>
<td></td>
</tr>
<tr>
<td>38</td>
<td>Scoparia dulcis L.</td>
<td>Scrophulariaceae</td>
<td>Osibo modhu</td>
<td>Diarrhea in children. Juice obtained from macerated leaves is mixed with water and orally administered.</td>
<td></td>
</tr>
<tr>
<td>39</td>
<td>Datura metel L.</td>
<td>Solanaceae</td>
<td>Leaf</td>
<td>Pain, ear ache, paralysis. Paste of leaves is applied to painful areas. Leaves are burned in fire and the ashes applied to the ears twice daily for 3 days as treatment for ear ache. Leaves are burnt in fire and then mixed with mustard oil and applied to paralyzed areas.</td>
<td></td>
</tr>
<tr>
<td>40</td>
<td>Solanum violaceum Orteg.</td>
<td>Solanaceae</td>
<td>Root</td>
<td>Vomiting tendency. Roots of Solanum violaceum are macerated with rhizomes of Zingiber officinale and roots of Hemidesmus indicus to obtain juice. Two tablespoonfuls of juice are orally taken.</td>
<td></td>
</tr>
<tr>
<td>41</td>
<td>Clerodendrum viscosum Vent.</td>
<td>Verbenaceae</td>
<td>Leaf</td>
<td>Pain. Crushed leaves are massaged onto painful areas.</td>
<td></td>
</tr>
<tr>
<td>42</td>
<td>Cissus quadrangularis L.</td>
<td>Vitaceae</td>
<td>Whole plant</td>
<td>Bone fracture. Macerated whole plants are applied to the fractured area.</td>
<td></td>
</tr>
</tbody>
</table>
To prepare mishri, sugar is added to boiling water till the sugar no longer dissolves. The sugar-water is next put in an earthen vessel and a string suspended in the middle of the vessel with the help of a stick put on top of the vessel. The sugar-water is then allowed to cool down and as it reaches ambient temperature, sugar crystals form and attach to the string. The crystals are separated from the string, dried and powdered, when it is known as mishri. Mishri is considered in folk medicines to have therapeutic properties of its own besides being used to make a juice from a medicinal plant more palatable when taken orally.

On the whole, the formulations were fairly simple, being juice obtained from plant parts, which was then applied topically or administered orally, depending upon the ailment. Of the 44 formulations, only 6 formulations contained combination of more than one plant. For instance, one of the formulations used for treatment of severe pain or joint pain included juice from three plants, namely, Echolium linneanum, Parthenocissus quinquefolia, and Colocasia nymphaefolia (Serial Number 2, Table 1). In our previous tribal ethnomedicinal surveys, we have observed that some ailments and/or some formulations were always esoteric in nature, meaning that they do not correspond with any known diseases or typical forms of treatment. The Bongshis were no exception to that. For instance, an esoteric treatment for pain involved collection of roots of Stephania japonica only during the Bengali month of Bhadra (mid-August to mid-September) and then only on any Saturday or Tuesday (see Serial Number 31). Notably, the Bengali word equivalents for Saturday are ‘Shoni’ (meaning the planet Saturn), and ‘Mongol’ (meaning the planet Mars). The two planets are considered in many tribes as well as the Hindu population of Bangladesh to have special influences on people’s lives, including ailments. An example of an esoteric ailment involved ‘shaper batash’ (see Serial Number 9). A literal translation of this means coming into contact with the wind of a snake. When asked, the Bongshi TMPs mentioned that this ailment does not mean actual snake bite but getting the wind from a snake. Apparently, when a snake is in close proximity to a human being but not within biting distance, it blows air on the human being, making him or her to fall sick.

Several plants of the Bongshi TMPs have been pharmacologically studied. Research findings have validated the anti-diabetic potential of two plants used by the Bongshi TMPs for treatment of diabetes, namely Curculigo orchioides (see Serial Number 7) and Ficus racemosa (see Serial Number 32) (Chauhan et al., 2010; Ahmed and Urooj, 2010; Jahan et al., 2009; Bhaskara Rao et al., 2002). Experimental studies have also indicated the efficacy of Cissus quadrangularis in repair of bone fractures (Udupa and Prasad, 1964; Chopra et al., 1975; Chopra et al., 1976), a plant used by the Bongshi TMPs for bone fracture (see Serial Number 42). The antinociceptive effects of Leucas aspera has also been demonstrated (Rahman et al., 2007; Hossan et al., 2011). The plant is used by the Bongshi TMPs for treatment of headache (see Serial Number 23). It would be interesting if further relevant pharmacological studies are conducted on the rest of the plants. Particularly interesting would be studies on anti-diabetic plants and plants used for treatment of pain. As mentioned before, diabetes cannot be cured totally with allopathic medicines. Also two major groups of drugs used for treatment of pain, namely, aspirin and paracetamol, respectively, have well-known side-effects of inducing ulceration and hepatotoxicity following high dosage or prolonged use. As such, the Bongshi medicinal plants have the potential for newer and more efficacious drugs to be discovered.

References


