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Medicinal plants of a folk medicinal healer of Rangpur district, Bangladesh

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Abstract

Folk medicinal healers (Kavirajes) of Bangladesh use a variety of medicinal plants to treat diseases and the selection of medicinal plants differs widely between Kavirajes of even adjacent areas. Thus, it is important to document the medicinal plants and formulations of individual Kavirajes. The objective of this study was to document the plants and formulations of a Kaviraj of Rangpur district, Bangladesh. The study was carried out with the help of a semi-structured questionnaire and the guided filed-walk method. The Kaviraj was observed to use a total of 17 plants distributed into 15 families in his formulations. The plants were used to treat various types of pain, fever, respiratory tract disorders, jaundice, skin disorders, liver disorders, gastrointestinal disorders, abscess, and chicken pox. Since ethnomedicinal observations can lead to further scientific research and discovery of new drugs, the medicinal plants used by the Kaviraj merit scientific attention.

Keywords: Ethnomedicine, Kaviraj, Rangpur, Bangladesh, medicinal plants

1. Introduction

Bangladesh is an under-developed country with the majority of the population living in rural areas with poor communication infrastructure and lacking access to modern medical facilities. Moreover, one-third of the population has below poverty level income, which has been defined as earning less than US\$ 1 per day. Modern doctors mainly practice in the cities, although a few can be found in sub-district headquarters. In combination, these factors make the people rely on folk medicinal healers or practitioners, otherwise known as Kavirajes and at least one Kaviraj per village can be found in the more than 86,000 villages of the country.

On the other hand, Bangladesh has a rich history of traditional medicines like Ayurveda, Unani, homeopathy, and folk medicine. The latter, as practiced by Kavirajes, is mainly dependent on simple formulations of medicinal plants for treatment of even complex diseases. Our previous surveys among Kavirajes and tribal medicinal practitioners have indicated a rich diversity of medicinal plant selections, even among practitioners of adjoining villages or tribes [1-15]. This is possibly because the traditional medicinal systems exist in the country in their individualized fashion as well as with occasional blending of practices. Another reason for this phenomenon is that Bangladesh is a hotspot regarding floral species with more than 5,000 recorded species within 55,000 square miles of the country.

This uniqueness of the medicinal plants selection and uses by the Kavirajes is really a boon for the ethnomedicinal researcher, for the researcher can gain considerable knowledge on the medicinal uses of the plants from as many surveys of Kavirajes as possible. As a consequence, one or two large surveys are not enough, and get a comprehensive view of the medicinal plant usages, surveys need to be conducted practically in every village where a Kaviraj is present. Such surveys are also necessary, because the evidences acquired over time have clearly indicated that observations of medicinal practices of indigenous societies or traditional medicinal systems have lead to discoveries of many modern allopathic drugs [16]. Such drugs include reserpine, atropine, vincristine, vinblastine, quinine, and artemisinin, to name only a few. The objective of the present study was to document the medicinal practices of a Kaviraj of Rangpur district, Bangladesh which is in the northern part of the country.

The village had one practicing Kaviraj named Md. Acher Ali, and 58 years of age. Visits were made to the village and the Kaviraj to create mutual understanding and a sense of kinship with the villagers and the Kaviraj.

Prior Informed Consent was first obtained from the Kaviraj. He was thoroughly apprised as to the nature of our visit and consent obtained to disseminate any information both nationally and internationally. It may be mentioned that the Kaviraj was at first reluctant about divulging his medicinal plant knowledge, but after several meetings was convinced to the extent that he agreed to disclose everything that he knows about medicinal plants to the interviewers. 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^[17] and Maundu^[18]. 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 describe their uses. All plant specimens were photographed and collected on the spot, pressed, dried and brought back to Bangladesh National Herbarium in Dhaka for identification. Voucher specimens were deposited with the Medicinal Plant Collection Wing of the University of Development Alternative.

2. Results and Discussion

The Kaviraj was observed to use a total of 17 plants distributed in 15 families in his various formulations. The total number of formulations was 19. These formulations were used to treat ailments like pain, fever, respiratory tract disorders, jaundice, skin disorders, infections in hands or legs, helminthiasis, bed wetting in children, liver disorders, gastrointestinal disorders, abscess, and chicken pox. The results are shown in Table 1.

The Kaviraj was observed to use a single plant to treat single or multiple diseases as well as a combination of plants to treat a single disease. For instance, seeds of *Ipomoea mauritiana* were used to treat rheumatic pain. The roots of *Mimosa pudica* were used to treat toothache as well as bed wetting in children. On the other hand, juice from fresh leaves of *Ocimum sanctum* was mixed with juice from rhizomes of *Zingiber officinale* and honey. One teaspoonful of the juice was advised to be taken orally in the morning and evening for treatment of coughs, mucus, liver disorders, stomach pain in children. Incidentally, *Ocimum sanctum* was used in combination with other plants for treatment of other diseases also. Paste of leaves of *Ocimum sanctum* and the upper portion of the leaves of *Cynodon dactylon* was advised by the Kaviraj to be topically applied once daily for prickly heat and itches. Additionally, leaf juice of *Ocimum sanctum* was mixed with lemon juice (fruit juice of *Citrus aurantifolia*) and advised to be orally taken at a dose of one teaspoonful in the morning and evening for helminthic infections. Taken together, our observations suggest that the Kaviraj possessed a quite remarkable knowledge of the manifold properties of medicinal plants and used them judiciously in combination with other plants to treat a diverse array of ailments. It may be mentioned in this context that the knowledge acquired by a Kaviraj is usually kept within the family and passed on from generation to generation and so over time, the knowledge becomes quite extensive through further acquisitions with every passing generation. However, it is still not clear whether the medicinal plant knowledge of a Kaviraj is empirical, i.e. gained through actual trial and error experiments, or is gained from books, or from anecdotal

evidences. The Kavirajes are reluctant to talk over this matter, but from our various surveys^[1-15], it appears that multiple processes like the ones mentioned above are involved behind the selection of medicinal plants and diseases treated by any particular Kaviraj.

While ethnomedicinal knowledge can lead to scientific studies on a given plant regarding its pharmacological activities in relevance to its ethnomedicinal use, scientific validation of ethnomedicinal use can also convince scientists that such knowledge is not mere quackery or superstitions, but possibly based on actual uses and evidences. It was therefore of importance to evaluate the scientific literature towards scientific validation of the Kavirajes' use of the medicinal plants.

Justicia gendarussa was used by the Kaviraj to treat body pain and fever. The anti-inflammatory and analgesic (pain relieving) properties of aerial parts of the plant have been reported^[19]. *Aristolochia indica* was used by the Kaviraj to treat rheumatic pain as well as respiratory tract disorders like coughs and mucus. The anti-inflammatory action of the plant against catfish venom has been shown^[20]; this property can give a beneficial effect on arthritis, which is an inflammatory disease. Incidentally, the plant has ethnomedicinal uses for treatment of coughs in North Gujarat, India^[21]. *Calotropis gigantea* was also used by the Kaviraj to treat pain (body pain); the analgesic and anti-inflammatory activities of the leaves of the plant has been reported^[22]. Roots of *Asparagus racemosus* and the leaves of *Aristolochia indica* were used by the Kaviraj to treat jaundice. The hepatoprotective action of *Asparagus racemosus* root extracts has been reported^[23]. *Aristolochia indica* is also reportedly effective against liver diseases^[24].

Ipomoea mauritiana was used by the Kaviraj to treat rheumatic pain. Any analgesic properties of the plant or plant parts are yet to be reported, and so this can form a plant to conduct further analgesic studies with. *Derris indica* and *Mimosa pudica* were also used by the Kaviraj to treat pain (rheumatic pain and toothache, respectively). Ethanolic extract of *Mimosa pudica* reportedly showed analgesic and anti-inflammatory potential^[25]. *Swertia chirayita* was used along with *Aristolochia indica* by the Kaviraj to treat rheumatic pain, coughs, and mucus. The analgesic activity of *Swertia chirayita* has been demonstrated^[26]. Since *Aristolochia indica* has reportedly anti-inflammatory properties^[20], the combination of the two plants can possibly give a synergistic beneficial effect to arthritic patients.

Ocimum sanctum was used along with *Zingiber officinale* to treat coughs, mucus, liver disorders, and stomach pain in children by the Kaviraj. The antitussive action of *Ocimum sanctum* has been experimentally shown^[27]. Alcoholic leaf extract of *Ocimum sanctum* also demonstrated hepatoprotective action against paracetamol-induced liver injury in rats^[28]. The hepatoprotective activity of *Zingiber officinale* has also been demonstrated scientifically^[29]. *Zingiber officinale* extract has further been reported to have effective antimicrobial activity and to be effective against coughs^[30]. This combination of the two plants once again demonstrates the medicinal plant knowledge of the Kaviraj, for the two plants in combination can prove effective against both coughs and liver disorders. The anthelmintic efficacy of *Ocimum sanctum* has also been shown experimentally^[31]; notably, the Kaviraj used the plant also against helminthic infections.

The use of *Azadirachta indica* against skin diseases has been

reviewed [32], the Kaviraj used leaves of the plant against eczema and scabies. The effectiveness of *Curcuma longa* against skin pathogens is also known [33]; notably, the Kaviraj used the leaves of *Azadirachta indica* and rhizomes of *Curcuma longa* to treat eczema and scabies. Among the other plants used by the Kaviraj, hepatoprotective activity of *Averrhoa carambola* has been reported [34]; the Kaviraj used the leaves and fruits of the plant against jaundice. *Vitex trifolia* was used by the Kaviraj against various types of pain. The

anti-inflammatory and analgesic properties of the *Vitex* genus has been reviewed [35].

Taken together, the various plants used by the Kaviraj have to a lesser or greater extent can be seen to be scientifically validated in their uses. Not only this suggests the medicinal plant knowledge of the Kaviraj, but it further points out to the importance of scientifically studying the medicinal plants used by the Kavirajes of Bangladesh, which can possibly result in discovery of lead compounds and novel drugs.

Table 1: Medicinal plants and formulations of the Kaviraj of Palashbari village, Rangpur district.

Serial Number	Scientific Name	Family Name	Local Name	Parts used	Disease, Symptoms, Formulations, and Administration
1	<i>Justicia gendarussa</i> Burm. f.	Acanthaceae	Birjar	Whole plant	Body pain, fever (chronic fever but with not too high body temperature). One spoonful of juice obtained from whole plant is orally taken in the morning and evening.
2	<i>Aristolochia indica</i> L.	Aristolochiaceae	Ishormul	Leaf	Rheumatic pain, coughs, mucus. Pills are prepared from dry leaves of <i>Aristolochia indica</i> and leaves of <i>Swertia chirayita</i> . Pills are orally taken twice daily in the morning and evening. See <i>Asparagus racemosus</i> .
3	<i>Calotropis gigantea</i> R. Br.	Asclepiadaceae	Akondo pata	Young leaf	Body pain, pneumonia. Young leaves are warmed and held to painful areas during body pain or chest during pneumonia. This is done twice daily in the morning and evening.
4	<i>Asparagus racemosus</i> Willd.	Asparagaceae	Shotomul	Root	Jaundice. Crushed roots of <i>Asparagus racemosus</i> are soaked in water and then mixed with leaves of <i>Aristolochia indica</i> . The mixture is taken orally thrice daily at a dosage of two spoonfuls each time.
5	<i>Ipomoea mauritiana</i> Jacq.	Convolvulaceae	Bhumi kumra	Seed	Rheumatic pain. Seeds are fried in oil. The oil is then massaged on the painful areas. The massaging is done usually twice daily in the morning and night or when pain increases.
6	<i>Jatropha curcas</i> L.	Euphorbiaceae	Laal kumarika	Leaf, fruit	Infections on hands or legs (whitish or red colored inflammation, oozing of blood from the infected area, burning sensations, pain). The affected area is cleaned thoroughly followed by topical application of paste of leaves and fruits. The application is repeated every 2-3 hours.
7	<i>Derris indica</i> (Lamk.) Bennet	Fabaceae	Kormocha	Fruit	Rheumatic pain. Crushed fruits are topically applied to painful areas twice daily in the morning and night or when severe pain occurs.
8	<i>Mimosa pudica</i> L.	Fabaceae	Lojjaboti	Root	Toothache. Paste of root is applied to painful tooth. Bed wetting in children. One spoonful of crushed roots are taken orally once daily in the morning.
9	<i>Swertia chirayita</i> (Roxb. ex Fleming.) H. Karst.	Gentianaceae	Chirata	Leaf	See <i>Aristolochia indica</i> .
10	<i>Ocimum sanctum</i> L.	Lamiaceae	Kalo tulshi	Leaf	Coughs, mucus, liver disorders, stomach pain in children. Juice from fresh leaves of <i>Ocimum sanctum</i> is mixed with juice from rhizomes of <i>Zingiber officinale</i> and honey. One teaspoonful of the juice is taken orally in the morning and evening. Prickly heat, itches. Paste of leaves of <i>Ocimum sanctum</i> and upper portion of leaves of <i>Cynodon dactylon</i> is topically applied once daily. Helminthic infections (symptoms: stomach pain, loss of appetite, paleness of face, weakness, swelling of abdomen, passing of helminthes with stool). Leaf juice of <i>Ocimum sanctum</i> is mixed with lemon juice (fruit juice of <i>Citrus aurantifolia</i>) and orally taken at a dose of one teaspoonful in the morning and evening.
11	<i>Azadirachta indica</i> A. Juss.	Meliaceae	Jat neem	Leaf, bark	Eczema, scabies. Leaves are boiled in water followed by taking a bath in the water. Following bath, paste of leaves of <i>Azadirachta indica</i> and rhizomes of <i>Curcuma longa</i> are applied topically to affected areas. Helminthic infections. Powdered dried bark (a small

					amount) is mixed with water and taken orally every morning. Chicken pox, abscess with pus and fever. Paste of leaves of <i>Azadirachta indica</i> and rhizomes of <i>Curcuma longa</i> are applied to pustules or abscess topically for 2-3 days.
12	<i>Averrhoa carambola</i> L.	Oxalidaceae	Kamranga	Leaf, fruit	Jaundice. A combination of leaf and fruit juice is taken orally 3-4 times daily.
13	<i>Cynodon dactylon</i> (L.) Pers.	Poaceae	Durba	Leaf	See <i>Ocimum sanctum</i> .
14	<i>Citrus aurantifolia</i> (Christm.) Swingle	Rutaceae	Lebu	Fruit	See <i>Ocimum sanctum</i> .
15	<i>Vitex trifolia</i> L. f.	Verbenaceae	Nishinda	Leaf, stem	Body pain, pain due to injury, joint pain. Leaves are boiled in water followed by taking a bath in the water. This is done once daily for a few days. Itches. Leaves are fried in sesame oil, and the oil is then massaged on the skin part, which is itching. This is done twice daily. Toothache, swelling of gums, bleeding from gums, loosening of teeth. Every morning teeth is brushed with stems.
16	<i>Curcuma longa</i> L.	Zingiberaceae	Holud	Rhizome	See <i>Azadirachta indica</i> .
17	<i>Zingiber officinale</i> Roscoe	Zingiberaceae	Ada	Rhizome	See <i>Ocimum sanctum</i> .

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