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ORIGINAL ARTICLE

A selection of medicinal plants used as blood purifiers by folk medicinal practitioners of Bangladesh

Shakila Akter, Protiva Rani Das, Md. Tabibul Islam, Mohammad Humayun Kabir, Md. Megbahul Haque, Zubaida Khatun, [1]Md. Nurunnabi, [1]Zehedina Khatun, [1]Yong-kyu Lee, [1]Rownak Jahan, [2]Mohammed Rahmatullah

[1]Faculty of Life Sciences, University of Development Alternative, Dhanmondi, Dhaka-1205, Bangladesh
[2]Department of Chemical and Biological Engineering, Korea National University of Transportation, Chungju, Republic of Korea, 380-702

Shakila Akter, Protiva Rani Das, Md. Tabibul Islam, Mohammad Humayun Kabir, Md. Megbahul Haque, Zubaida Khatun, Md. Nurunnabi, Zehedina Khatun, Yong-kyu Lee, Rownak Jahan, Mohammed Rahmatullah: A selection of medicinal plants used as blood purifiers by folk medicinal practitioners of Bangladesh

ABSTRACT

Traditional medicine even in the present century plays an important role in delivering necessary health-care to the people of particularly the developing countries. Traditional medicinal systems usually rely on medicinal plants for treatment, which plants are utilized by traditional medicinal practitioners for treatment of a diverse variety of diseases, against some of which allopathic medicine has no known cure. Folk medicine is the most widely used form of traditional medicine in Bangladesh. Folk medicinal practitioners believe that ailments can occur through accumulation of toxins in blood, which in turn results from undigested food or improper emptying of bowels on a regular basis. The various toxins that accumulate then pass through the blood to various organs of the body and if they pass a certain threshold, the body no longer can defend itself against diseases resulting in diseases occurring from both within and without causes. As a result, one of the most frequent remedies prescribed by the folk medicinal practitioners or Kavirajes of Bangladesh is medicinal plant, which can purify blood, i.e. enable the body to get rid of toxic wastes either through neutralization or through elimination. Such blood purifying medicinal plants may or may not be accompanied with other medicinal plants dealing with treatment of the disease itself or its symptoms. This suggests that blood purifiers at the very least produces a laxative effect and can at the same time or independently boost up the immune system of the body. In fact, the Kavirajes advise even healthy people to take these blood purifying medicinal plants or plant parts on a regular basis such that toxins cannot accumulate within the body. The objective of the present study was to conduct ethnomedicinal surveys among the Kavirajes of various districts of Bangladesh to document their use of blood purifying medicinal plants. A total of 149 plants were found to be used by the 203 Kavirajes interviewed, of which 47 plant species are presented in this report. The plant species belonged to 30 families. Fabaceae family plants appeared to be the dominant species used by the Kavirajes contributing a total of 8 plants within the 47 plants reported. The Apocynaceae and the Zingiberaceae family contributed three plants each. Since prevention is always better than cure of any disease, the plants presented in this report can form the basis of further studies towards discovery of their possible immune-boosting and disease-preventing effects.

Key words: Medicinal plants, folk medicine, blood purifier, Bangladesh

Introduction

Traditional medicine system still plays a major role in the delivery of primary health-care, particularly in the developing countries. With the advent of modern or allopathic medicine, traditional medicinal systems appeared to be outdated to allopathic practitioners. Yet various forms of the system still persist for a number of reasons. Allopathic medicine cannot cure many diseases and many allopathic medicines have developed drug-resistant vectors. Moreover, many allopathic medicines have serious side-effects. Allopathic medicines are also costly and allopathic doctors and clinics are not present in most rural areas, making patient visits to allopathic doctors difficult. Thus it is no surprise that scientists in recent times have taken a new interest in the traditional medicinal systems of various countries, and people in the developed world also visit traditional medicinal practitioners. In fact, allopathic medicine owes a lot to traditional medicinal systems of indigenous communities,

Corresponding Author: Dr. Mohammed Rahmatullah, Pro-Vice Chancellor University of evelopment Alternative House No. 78, Road No. 11A (new) Dhanmondi R/A, Dhaka-1205 Bangladesh
Phone: 88-01715032621; Fax: 88-02-8157339; E-mail: rahamatm@hotmail.com

for many important allopathic drugs have been discovered from close surveys of indigenous community medicinal practices (Balick and Cox, 1996; Gilani and Rahman, 2005).

Bangladesh has a number of operational traditional medicinal systems, which include homeopathy, Ayurveda, Unani, folk medicine and home remedies. Among all these, folk medicine is perhaps the most popular and has the most practitioners and adherents. Folk medicinal practitioners are known as Kavirajes and can be found in practically every village of the 86,000 villages spread throughout the country. Kavirajes also practice in small towns and cities and are most often frequented by both the rural and urban poor. Kavirajes also occasionally act as the last resort for patients who have been told by allopathic doctors as to their disease as being in the terminal stage. The mainstay of usual formulations of any Kaviraj is medicinal plants, although sometimes animal, bird, or fish parts and minerals may be used. Medicinal plants are used in the form of direct administration or in the form of decoctions, juices or pastes, which depending on the disease, may be administered either orally or topically.

Kavirajes have their own hypothesis for arising of various diseases. The most frequently used hypothesis is that a number of diseases arise from accumulation of toxins in the blood. Toxins, in turn, come from undigested food material in the intestine or from not having regular bowel movements. Toxins, after entering the blood, circulate to various regions of the body and causes diseases by poisoning of specific parts of the body or lowering the defenses of specific parts of the body. As such, toxins can be regarded as to impair the immune system of a person. Kavirajes administer medicinal plants, which they consider as blood purifiers. Ingestion of these plants, according to the Kavirajes, either neutralizes the toxins or help in their elimination from the body. In fact, not only during diseases, but also when somebody is in a normal healthy state, a Kaviraj may advise ingestion of a particular plant as a preventive measure against accumulation of toxins. These plants are called by the Kavirajes as blood purifiers, because they are presumed to purify blood from any accumulated toxins.

This accumulation of toxins in blood and purification of blood through ingestion of medicinal plants is quite an established concept among various traditional medicinal systems and indigenous communities throughout the Indian sub-continent. For instance, it has been reported that the plant *Houttuynia cordata* Thinb. (Saururaceae) is used by various tribes of Cachar district in Assam, India as a blood purifier (Das *et al*., 2008). The people of Margala Hills National Park in Islamabad, Pakistan use *Fumaria indica* (Hausskn.) Pugsley (Fumariaceae) for the same purpose (Ahmad *et al*., 2009). Ethnobotanical studies from northern Pakistan indicate that the plant or fruits of *Hippophae rhamnoides* L. (Rhamnaceae) is used for purifying blood (Afzal *et al*., 2009). In some interior areas of Pauri Garhwal, Uttrakhand, India, the plant *Clinopodium umbrosum* Koch. (Lamiaceae) is used as a blood purifier (Pala *et al*., 2010). The use of medicinal plants as blood purifiers is not confined to the Indian sub-continent countries. Medicinal plants like *Harpephyllum caffrum* Bernh ex CF Krauss (Anacardiaceae) is used in South Africa as blood purifier, emetic, and for treating acne and eczema (Watt and Breyer-Brandwijk, 1962). Traditional healers in Durban area of South Africa use the plant *Haworthia limifolia* Marloth (Asphodelaceae) as a blood purifier and for treatment of coughs, skin rashes, sun burns, and burns (Coopoosamy and Naidoo, 2012).

Bangladesh is presumed to have over 5,000 floral species of which various estimates put the number of plants used for medicinal purposes by Kavirajes and other traditional medicinal systems between 500-1200. Needless to say, a proper documentation of either the total number of floral species or the number of plants used for medicinal purposes is yet to be done. Towards filling up this gap in our traditional medicinal knowledge, we had been conducting ethnomedicinal surveys among Kavirajes of various districts of Bangladesh as well as tribal medicinal practitioners for a number of years (Nawaz *et al*., 2009; Rahmatullah *et al*., 2009a-c; Hasan *et al*., 2010; Hossan *et al*., 2010; Mollik *et al*., 2010a,b; Rahmatullah *et al*., 2010a-g; Haque *et al*., 2011; Jahan *et al*., 2011; Rahmatullah *et al*., 2011a,b; Sarker *et al*., 2011; Rahmatullah *et al*., 2012a-d). During the course of our various surveys, we observed that a large number of Kavirajes prescribe medicinal plants as blood purifiers for both preventive and therapeutic purposes. The objective of the present study was to conduct a search among Kavirajes of randomly selected villages of different districts of the country to document the plants used by the Kavirajes for purification of blood.

Materials and Methods

The present study was conducted between February 2010 and April 2012. Kavirajes of various randomly selected villages were interviewed as to the medicinal plants they used for treatment of various diseases, including plants that they advise or administer for purifying blood. The various villages selected were from 56 of the 64 districts of the country. Informed consent was initially obtained from the Kavirajes following an explanation of the purpose of our visit. Consent was further obtained to disseminate any information provided to be published both nationally and internationally. Actual interviews were conducted with the help of a semi-structured questionnaire and the guided field-walk method of Martin (1995) and Maundu (1995). Information on all diseases treated by the Kavirajes was collected; however, information pertaining to the use of plants for blood purification will only be presented here. Even among this information, plants which fall under the

alphabetical category of A-I will be presented because of the huge number of plants that are used by the Kavirajes for the purpose of blood purification. In the guided field-walk method, the Kavirajes took the interviewers on field-walks through areas from where they collected their medicinal plants, pointed out the plants, and described their uses. Plant specimens were collected from the spot, photographed, dried, and brought back to the Bangladesh National Herbarium at Dhaka for complete identification. Voucher specimens were deposited with the Medicinal Plant Collection Wing of the University of Development Alternative.

Results and Discussion

A total of 149 plants were collected from the Kavirajes, which were used by them as blood purifiers. Of the 149 plant species, information on 47 plant species will be provided in this report. These 47 plant species belonged to 30 families. The Fabaceae family seemed to be the most used family as blood purifier, contributing a total of 8 plants. The Apocynaceae and the Zingiberaceae family provided 3 plants each. The results are shown in Table 1.

Table 1: Medicinal plants used by folk medicinal practitioners of Bangladesh as blood purifiers.

Botanical name	Family	Local name	Parts used	Formulation
Abelia chinensis R. Br.	Linnaeaceae	Gunal	Whole plant	Juice obtained from macerated whole plant is administered orally.
Abroma augusta L.f.	Sterculiaceae	Ulot Kombol	Leaf stalk	Leaf stalks are chewed.
Acacia catechu (L. f.) Willd.	Fabaceae	Khoyer	Wood	Khoyer is produced by boiling the wood in water and evaporating the resulting brew. Following evaporation, the product is dried, powdered and usually taken with betel leaf and lime.
Acacia farnesiana L.	Fabaceae	Babla	Bark	Bark is chewed with molasses.
Achyranthes aspera L.	Amaranthaceae	Apang	Flower	Flowers are chewed.
Adenanthera pavonina L.	Fabaceae	Rokto chondon	Bark, wood	Decoction of bark is taken. Alternately, dried wood powder is taken orally.
Alocasia macrorrhizos (L.) G. Don.	Araceae	Maan kochu	Whole plant, leaf	Juice obtained from macerated whole plant is taken. Alternately, leaves are cooked and eaten as a vegetable.
Alpinia galanga (L.) Sw.	Zingiberaceae	Hoimboti boch	Rhizome	Juice obtained from macerated rhizome is taken orally.
Amaranthus gangeticus L.	Amaranthaceae	Data shak	Leaf, top portion of stem	Leaves and top portions of stems are fried or cooked and eaten.
Amaranthus spinosus L.	Amaranthaceae	Kanta khudurey	Leaf	Juice obtained from macerated leaves is taken orally.
Ardisia solanacea Roxb.	Myrsinaceae	Tita jam	Fruit	Fruits are taken on a regular basis.
Artocarpus lakoocha Roxb.	Moraceae	Dewa	Fruit	Fruits are taken on a regular basis.
Asparagus racemosus Willd.,	Liliaceae	Shotomuli	Whole plant	Juice obtained from macerated whole plant is taken.
Azadirachta indica A. Juss.	Meliaceae	Neem	Bark	Decoction of bark is taken.
Bacopa monnieri (L.) Pennell	Scrophulariaceae	Brahmi shak	Leaf	Leaves are chewed and taken orally.
Barleria prionitis L.	Acanthaceae	Jhingti	Leaf	Juice obtained from macerated leaves is taken.
Bauhinia racemosa Lam.	Fabaceae	Kanchon	Root	Decoction of root is taken.
Bauhinia variegata L.	Fabaceae	Rokto kanchon	Bark	Decoction of bark is taken.
Boerhaavia diffusa L.	Nyctaginaceae	Punornova	Leaf	Juice obtained from macerated leaves is taken.
Cajanus cajan (L.) Millsp.	Fabaceae	Orhor	Leaf	Juice obtained from macerated leaves is taken.
Carissa carandas L.	Apocynaceae	Koromcha	Fruit	Fruits are taken on a regular basis.
Cassia occidentalis L.	Fabaceae	Kulka sunda	Leaf	One tola (local measure approximates 12.5g) leaf juice is taken with mishri (crystalline sugar) in the morning.
Cassia sophera L.	Fabaceae	Thonthoni	Leaf	Juice obtained from leaves is taken in the morning on an empty stomach.
Centella asiatica (L.) Urb.	Apiaceae	Thankuni	Leaf	Leaves are boiled in water and the decoction taken with honey.
Citrus grandis (L.) Osbeck	Rutaceae	Jambura	Fruit	Fruits are eaten with mustard oil and young peppers.
Clerodendrum viscosum Vent.	Verbenaceae	Vite	Leaf	Juice obtained from macerated leaves is taken.
Coccinia grandis (L.) J. Voigt	Cucurbitaceae	Telakucha	Whole plant	Juice obtained from macerated whole plant is taken.
Codiaeum variegatum (L.) A.Juss.	Euphorbiaceae	Pata bahar	Bark	500g bark is boiled in 2 liter water till the volume is reduced to ½ liter. One tablespoonful of the decoction is taken

				orally thrice daily after meals.
Colocasia esculenta (L.) Schott	Araceae	Fota kochu	Stem	Juice obtained from macerated stems is taken.
Combretum pilosum Roxb.	Combretaceae	Junia mul	Whole plant	Juice obtained from macerated whole plant is taken.
Costus speciosus (J. König.) Sm.	Costaceae	Kemok	Stem, root	Paste prepared from stems or roots is taken twice daily (one teaspoonful each time)
Curcuma amada Roxb.	Zingiberaceae	Aam ada	Rhizome	Rhizomes are eaten in the form of chutney.
Curcuma longa L.	Zingiberaceae	Holud	Rhizome	Dried and powdered rhizome is taken with a little water. Alternately, ½ chatak (local measure, 1 chatak approximates 62.5g) juice obtained from macerated rhizomes is taken three times.
Cymbidium aloifolium (L.) Sw.	Orchidaceae	Rashna	Leaf, root	Juice obtained from macerated leaves and roots is taken.
Cynodon dactylon (L.) Pers.	Poaceae	Durba	Leaf	Leaves are chewed.
Dioscorea glabra Roxb.	Dioscoreaceae	Shuksomi	Root	Roots are chewed.
Diospyros peregrina (Gaertn.) Gürke.	Ebenaceae	Gab	Fruit	Ripe fruits are eaten.
Enhydra fluctuans Lour.	Asteraceae	Helencha	Leaf	Leaves are chewed.
Eragrostis amabilis (L.) Wight & Arn.	Poaceae	Heth papra	Whole plant	Juice obtained from macerated whole plant is taken.
Ficus hirta Vahl.	Moraceae	Muchrong	Fruit	Fruits are macerated with honey, ghee (clarified butter) and sugar and taken on an empty stomach once daily for 7 days.
Ficus hispida L.f.	Moraceae	Kack dumur	Leaf	Juice obtained from macerated leaves is taken.
Gmelina arborea Roxb.	Lamiaceae	Gamari	Bark	Bark is boiled with water and the decoction taken.
Hemidesmus indicus R. Br.	Apocynaceae	Onontomul	Root	Roots are chewed.
Holarrhena pubescens Wall. ex G. Don	Apocynaceae	Kurchi	Leaf	Leaves are chewed.
Hoya diversifolia Bl.	Asclepiadaceae	Shyam plant	Whole plant	Juice obtained from macerated whole plant is taken.
Ipomoea aquatica Forssk.	Convolvulaceae	Kolmi shak	Whole plant	Juice obtained from macerated whole plant is taken.
Ipomoea mauritiana Jacq.	Convolvulaceae	Bhui kumra	Root	Roots are chewed.

The Kavirajes were observed to use whole plant as well as plant parts for the purpose of blood purification. The observed mode of administration was totally oral. Plant parts were either chewed directly, or juice obtained from whole plants or plant parts through maceration was taken orally. In some cases, a decoction was taken orally; decoction was prepared by boiling whole plant or plant part in water till the volume of water has been reduced by at least 50%. This decoction was then cooled and taken orally. An example of administration of whole plant can be found with *Abelia chinensis*, where juice obtained from macerated whole plant was advised to be taken orally. A more complex procedure was followed with the wood of *Acacia catechu*, where the wood was boiled in water and the water evaporated. The resultant product was then dried, powdered and taken either singly or more often in combination with betel leaves and lime. Occasionally, a plant was advised to be cooked and taken, as in the case of *Alocasia macrorrhizos* or *Amaranthus gangeticus*.

In the case of *Cassia occidentalis*, leaf juice was advised to be taken with mishri (crystalline sugar). The preparation of mishri involved addition of sugar to boiling water till saturation, followed by cooling the mixture when sugar separated out as crystals. Mishri was used by the Kavirajes not only to make a plant juice have a more palatable taste, but also because it was considered that mishri had separate therapeutic properties on its own. Other ingredients added to a plant part or whole plant for the purpose of blood purification included taking of boiled leaves of *Centella asiatica* with honey, or taking fruits of *Citrus grandis* with mustard oil and peppers. In both cases the purpose was to make the plant item more palatable. The fruits of *Ficus hirta* were advised to be macerated with honey, ghee (clarified butter) and sugar and then taken on an empty stomach. It was mentioned by the healer prescribing the fruits of this plant that honey and ghee would have a synergistic effect on the blood purification properties of the fruits.

Accumulation of toxins in blood and consequential appearance of diseases as well as the necessity for blood purification through medicinal plants is also an Ayurvedic concept, first formulated possibly around 3,500 years ago. Hundreds of plants are used in Ayurveda for blood purification, particularly plants which are also considered astringent or bitter, i.e. plants with pungent or sharp tastes. An example is *Gentiana kurroo* Royle (Gentianaceae) – a plant which is used both as an astringent and as a blood purifier (Behera and Raina, 2012). People who need to balance pitta and kapha generally need to eat more bitter and astringent foods according to

Ayurveda. The major concept behind the use of blood purifiers by the Kavirajes of Bangladesh is that toxins or toxic materials can be accumulated in the body through improper elimination of undigested foods and feces due to irregular bowel movement, from overeating, or from indigestion. These toxins, following accumulation in the stomach pass to other organs of the body through circulating blood, causing diseases in these organs. As such, a person needs to take blood purifiers (plants are usually prescribed) for both therapeutic purposes as well as preventive purposes. Blood purifying plants can also be important from the allopathic medicinal point of view in that they can serve as agents for treatment of gastrointestinal disorders, other disorders of other body organs or as a general immune boosting substance. Greater scientific research is therefore necessary to obtain more information on blood purifying plants and learn the exact pharmacological effects that they have on human and animal bodies.

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