

## Folk Medicinal Use of Plants to Treat Skin Disorders in Chandpur District, Bangladesh

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### Abstract

**Title:** Folk medicinal use of plants to treat skin disorders in Chandpur district, Bangladesh.

**Background:** Folk medicinal practitioners (FMPs) possibly form the largest group of traditional medicinal practitioners in Bangladesh. FMPs essentially use plants for treatment of diseases; however, the selection of plants can differ widely among FMPs even within the same region. The objective of the present study was to document the phytotherapeutic practices of several FMPs in Chandpur district, who treated various types of skin disorders.

**Methods and findings:** Interviews of the FMPs regarding their phytotherapeutic practices were carried out with the help of a semi-structured questionnaire and the guided field-walk method between 2016-2017. The FMPs used a total of 10 plants distributed into 10 families in their 9 formulations.

**Conclusions:** Skin diseases are common in Bangladesh, particularly among the rural and urban slum people. These people most often cannot afford a visit to allopathic doctors. As such, the medicinal plants of the FMPs can prove useful in the treatment of skin disorders.

**Keywords:** Phytotherapy; Folk medicine; Chandpur; Bangladesh; Skin disorders

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### Introduction

The World Health Organization (WHO) has found a high prevalence of skin diseases in the general population of developing countries, some diseases being more prevalent in children. The major skin disorders found in children, as reported by the World Health Organization, include pyoderma, tinea capitis, scabies, viral skin disorders, pediculosis capitis, dermatitis, and reactions due to insect bites [1]. Besides skin problems caused due to ingestion of arsenic-contaminated food and water, skin diseases are common in the rural and urban slum population of Bangladesh because of lack of proper toilet facilities and unhygienic conditions of living. A study of skin patients at Faridpur Medical College Hospital, Bangladesh revealed that the common skin infections are eczema, fungal infections, scabies, and pyodermas [2].

Eczema is a collective term for some medical conditions that can cause the skin to get irritated or inflamed, the most common form of eczema being known as atopic dermatitis. The disorder has no total cure in allopathic medicine; however symptoms can be

alleviated with various types of drugs including corticosteroids. Common superficial fungal infections of the skin in children include tinea capitis, tinea corporis, and pityriasis versicolor [3]. Scabies is caused by a parasite. Pyodermas are bacterial infections of the skin, which bacteria may include among others, various species of *Staphylococcus*.

From ancient periods, people in Bangladesh have been used to medicines, which are now referred to as alternative, complementary or traditional medicines. This has continued even at present after introduction of allopathic medicines. A number of factors are behind these. First, traditional medicines have proven their efficacy over hundreds and thousands of years. Second, a large number of people of the country do not have access to modern doctors or cannot afford doctor's fees or the cost of allopathic medicines. Third, a number of allopathic medicines give adverse effects. All of the above factors have led to the use of traditional medicines even in present times.

Two other problems have arisen, which necessitates discovery of new drugs. The first is the emergence of new types of diseases like bird flu and other viral diseases. The second is the growing resistance of various disease-causative agents to available allopathic drugs. As such, new drugs are necessary, and one of the time-proven methods to discover new drugs is conducting ethnomedicinal surveys among traditional medicinal practitioners. Towards that, we had been conducting ethnomedicinal surveys among folk medicinal practitioners (FMPs) and tribal medicinal practitioners for quite some time [4-13]. The objective of the present study was to document the plants used by FMPs in Chandpur district, Bangladesh to treat skin disorders.

## Materials and Methods

The survey was conducted in Chandpur district, Bangladesh

(area 189.90 square kilometers, located in between 23°12' and 23°20' north latitudes and in between 90°45' and 90°55' east longitudes). Initially visits were made to randomly selected villages of the district and presence of any practicing FMP(s) in the village determined. A total of four FMPs from four different villages were selected based on their claim that they treated skin disorders. Claims of the FMPs were authenticated by the villagers prior to any further deliberations. Informed consent was obtained from each FMP to disseminate any information obtained.

Actual interviews and collection of plant specimens were conducted through the guided field-walk method of Martin [14] and Maundu [15]. In this method, the FMPs took the interviewers through daytime guided field-walks through areas from where they collected their plants or plant parts and the plant(s) were shown to the interviewers. Plant specimens were photographed and collected on the spot and brought back for identification by a trained botanist at the Medical Plant Collection Wing of the University of Development Alternative. Interviews of the FMPs were conducted in Bengali, which was spoken fluently by all.

## Results and Discussion

### Medicinal plants and diseases treated by the FMP

The FMPs were found to use a total of 10 plants distributed into 10 families in their formulations, which were 9 in number.

**Table 1:** Medicinal plants and formulations used by folk medicinal practitioners of Chandpur district, Bangladesh to treat skin disorders.

S. No	Scientific Name (English name)	Family Name	Local Name	Parts used	Ailments and mode of medicinal use
1	<i>Blumea lacera</i> (Burm.f.) DC. (Kakronda, Blumea)	Asteraceae	Shial mutra	Whole plant	Skin diseases, skin tumor, scabies, blood purification. For skin diseases (acne, eczema) and skin tumor, whole plant is boiled in water and the decoction filtered. Two table spoons of the decoction are taken thrice daily orally. For scabies and blood purification, one table spoon of the decoction is taken daily in the morning on an empty stomach.
2	<i>Heliotropium indicum</i> L. (Indian heliotrope)	Boraginaceae	Hatisur	Leaf, stem	Skin diseases (any type). Paste of leaves or juice obtained from crushed leaves and stems is topically applied.
3	<i>Cuscuta reflexa</i> Roxb. (Giant dodder)	Convolvulaceae	Swarna lota	Vine	Skin infections. Juice obtained crushed fresh vine is taken orally.
4	<i>Senna alata</i> (L.) Roxb. (Candle bush)	Fabaceae	Daud gach	Leaf	Ringworm infection. Paste prepared from crushed tender leaves is topically applied thrice daily to infected area(s) after washing the area with warm water.
5	<i>Lawsonia inermis</i> L. (Henna)	Lythraceae	Mehedi	Leaf	Scabies, skin infections, wound. Paste prepared from tender leaves is applied topically to affected area one hour before taking a bath. This is continued for 8-10 days. Alternately, leaves are dried and then soaked in water to prepare syrup. Four teaspoons of the syrup are taken orally thrice daily for 35-40 days.
6	<i>Azadirachta indica</i> A. Juss. (Neem)	Meliaceae	Neem	Leaf	Scabies, fungal skin diseases. Paste of leaf is applied topically one hour before taking bath.
7	<i>Tinospora cordifolia</i> (Willd.) Miers. (Indian Tinospora)	Menispermaceae	Guloncho	Whole plant	Skin diseases (bacterial). Whole plant is cut into small pieces and boiled in water to make syrup. The syrup is taken orally thrice daily on an empty stomach.
8	<i>Aegle marmelos</i> (L.) Corr. (Indian quince)	Rutaceae	Bael	Leaf	Acne, pimples, dark spots. Tender leaves of <i>Aegle marmelos</i> and rhizomes of <i>Curcuma longa</i> are crushed together to make paste. The paste is applied topically for an hour before taking a bath.
9	<i>Solanum hannemanii</i> RG van den Berg and N Groendijk-Wilders	Solanaceae	Kanta baegun	Whole plant	Acne, scabies. Whole plants are dried to prepare powder, which is taken orally in the morning daily on an empty stomach.
10	<i>Curcuma longa</i> L. (Turmeric)	Zingiberaceae	Holud	Rhizome	See <i>Aegle marmelos</i> .



These formulations were used to treat skin diseases like acne, eczema, scabies, ringworm, pimples, and dark spots. The results are shown in **Table 1**. Interestingly, one plant, *Blumea lacera* was used to treat skin tumors, tumors being defined by the FMP as unexplained swellings on the skin surface. The FMPs did not understand the causative agent(s) behind various skin infections like ringworm or other fungal or bacterial skin infections. Their treatments were based on visual inspection of the skin. As a result, most of the infections were simply termed “charma rogh”, charma being Bengali for skin, and rogh being Bengali for disease or disorder.

*Blumea lacera* leaf paste has applications among the Santal tribe living in Susunia Hill of Bankura District, West Bengal, India to stop bleeding from wounds [16]. *Heliotropium indicum* (**Figure 1**) is used in cases of dermatitis; leaf paste is used for the treatment of skin infections [17]. Traditional healers in Kancheepuram district of Tamil Nadu, India, use the plant to cure skin diseases; leaves are used to treat skin infection in Nicaragua [18]. Ethnomedicinal application of *Cuscuta reflexa* for treatment of skin diseases has been reviewed [19].

The skin disease(s) curing property of *Senna alata* (**Figure 2**) leaves has also been reviewed [20]. Antibacterial and antifungal activities of leaf extract have also been demonstrated [21]. Extract of *Lawsonia inermis* (**Figure 3**) leaf showed inhibitory activity against a skin pathogen, *Streptococcus pyogenes* [22]. Various parts of *Azadirachta indica* including leaves are known for antidermatophytic activity (a number of diseases caused by bacteria and fungus) [23]. *Tinospora cordifolia* is a well-mentioned plant in Ayurveda texts for treatment of skin diseases [24]. The antifungal activity of *Aegle marmelos* (**Figure 4**) leaf extract against dermatophytic fungi has been demonstrated [25]. *Solanum hannemanii* seems to be a unique (previously unreported) plant used against skin diseases by the FMPs and



**Figure 1** *Heliotropium indicum*.



**Figure 2** *Senna alata*.



**Figure 3** *Lawsonia inermis*.

so merits further scientific research. *Curcuma longa* has from ancient periods used for skin care including brightening of skin, improving skin texture, and against various skin diseases; the use of rhizomes of the plant to cure ringworm, eczema and other parasitic skin diseases has been reviewed [26].

Taken together, it is quite evident that FMPs of Bangladesh can possess considerable knowledge of the therapeutic properties of plants. Scientific evidences support the use by the FMPs and tribal medicinal practitioners, as observed and analyzed in a number of





**Figure 4** *Aegle marmelos*.

our studies before [27-30]. The medicinal plants of Bangladesh can play a vital role in the discovery of lead compounds and new drugs.

## Conclusion

The medicinal plants used by the FMPs appear to have similar ethnomedicinal uses for treatment of skin disorders in other regions of the world. Plants like *Senna alata* and *Azadirachta indica* are also validated scientifically for skin disease(s) treatment. Thus these plants can be readily available and affordable sources for treatment of skin diseases.

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