



## Research Article

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# Do Folk Medicinal Practices of Bangladesh Have any Scientific Value? an Appraisal of Phytotherapeutic Practices of a Rural Folk Medicinal Practitioner

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## Abstract

Folk medicine is generally considered as phytotherapy practiced by an individual or a group of individuals, who do not need to obtain any institutional training or approval to practice, and who can practice on a regular basis or as a hobby. In Bangladesh, folk medicinal practitioners (FMPs) are a varied lot using a bewildering variety of plants to treat almost every ailment suffered by human beings. It is the general opinion of allopathic doctors and the affluent section of the Bangladeshi population that FMPs practice nothing but quackery and their main objective is to deceive people. It was the objective of the present study to document the phytotherapeutic practices of a village FMP of Bangladesh and to search through the scientific literature to determine whether the plants used by the FMP had any scientific validation behind their uses. Our results clearly demonstrate that folk medicinal plants have substantial scientific validations, which possibly has come through practice of folk medicine and honing of such practices over thousands of years and transmission of acquired knowledge to successive generations initially orally and then through written methods.

**Keywords:** Folk medicine; Scientific validation; Phytotherapy; Kushtia; Bangladesh

## Introduction

Folk medicine (FM) is practiced by part-time or full-time folk medicinal practitioners (FMPs) in Bangladesh, utilizing for the most part plant-based remedies as their modus operandi for treatment of practically all ailments suffered by the Bangladesh people. FM is not unique to Bangladesh; it is present in practically every country of the world under different names or guises like home remedies, herbal remedies, etc. With time, FM can even take on a more formal form in which cases they are known as Ayurveda and Siddha (in India), Unani (in Greece) or Kampo (in Japan). People of Thailand are said to use herbal remedies since the Sukothai period (1238-1377) [1]. However, the use of plants as medicines dates back to much earlier times. Radiocarbon dating shows that plants were cultivated in ancient Babylon (present Iraq) more than 60,000 years ago [2]. It is possibly safe to say that human beings have suffered from ailments since their very advent and have tried to cure such ailments possibly from the earliest human ancestors about 6-7

million years ago – the Australopithecines [3]. It is to be taken into account that the great apes and other animal species instinctively partake of some plants for medicinal purposes [4], and the earliest hominids could have easily caught onto this ‘cure’ system.

Ethnomedicine is still somewhat a new concept in Bangladesh even though the country possibly has more than a hundred tribes and over 5500 plant species. With the emergence of new diseases, drug-resistant vectors, and adverse effects of allopathic medicines, even modern doctors and scientists are giving FM a second look. There is a desperate need for new drugs to treat diseases like malaria and antibiotic-resistant microorganisms; plant kingdom, which has always been a source for new drugs [5], can also be the sources for novel drugs at present and in the future. In this instance, FMs can play a key role in guiding scientists to plants with strong potential as sources of novel and efficacious drugs, for from constant practice they can be the most knowledgeable persons on

therapeutic properties of plants. Another possible advantage of FMs and tribal medicinal practitioners (TMPs, really tribal FMs) is that due to regional diversity or simply knowledge-based diversity, there can be huge variations between the selections of plants to treat the same disease from one FM to another, even though both FMs may be practicing quite close to one another [6-35]. This opens up alternate sources of discovering possible new drugs with less or no adverse effects. FM is generally dismissed by the allopathic doctors and the affluent section of the population as 'quackery'. Our objective was to select at random a FMP, and see whether the FMP's therapeutic uses of plants are supported by available scientific reports on the pharmacological activities of the plant and reported phytochemicals in the plant with appropriate therapeutic benefits. As such we chose a rural FMP for such FMPs, if any, may be more prone to such 'quackery'.

## Methods

The FMP was named Shahidul Islam, male, middle-aged, that is around 45 years of age. He practiced in the villages of Daulatpur Upazila (sub-district) in Kushtia district, Bangladesh. The sub-district had a total number of 246 villages with an area of 468.76 square kilometer and a population density of 946 per square kilometer. Kushtia district is located in between 23°42' and 24°12' north latitudes and in between 88°42' and 89°22' east longitudes with an area of 1621.15 sq km. The practice of the FMP was to travel in the various villages searching for prospective patients and also practicing from home at Gobrapara village, Kushtia district. Prior informed consent was initially obtained from the FMP. The FMP was informed the reason for our visit and consent obtained to disseminate any information provided including his name both nationally and internationally. Actual interviews were conducted in the Bengali language, which was spoken fluently by the FMP as well as the interviewers, the language being the mother tongue of FMP, villagers and the interviewers. The interviews were conducted with the help of a semi-structured questionnaire and the guided field-walk method of Martin [36] and Maundu [37]. In this method the FMP took the interviewers to spots from where he collected medicinal plants for therapeutic purposes. (In Bangladesh every

village will have fallow land, secluded spots, small water bodies, or a strip of forest from where FMPs and folk herbalists collect their medicinal plants.) The FMP showed the interviewers a number of plants and described their therapeutic uses. All plant specimens shown by him were collected on the spot, pressed, dried and brought back to Dhaka for identification by a competent botanist. Voucher specimens were deposited with the Medicinal Plant Collection Wing of the University of Development Alternative. Secondary information on the pharmacological properties and phytochemicals of the plants used by the FMP were obtained from papers in PubMed, SCOPUS and Google Scholar abstracted journals.

## Results and Discussion

The FMP used a total of twelve plants in monoherbal and polyherbal formulations to treat fever, loss of appetite, rheumatism, snake bite, female hormonal disorders, gastritis, anemia, neck pain, nerve sprain, sleep paralysis, ear infection and as a galactagogue. The results are shown in Table 1. Female hormonal disorders are taken in rural Bangladesh to mean either infertility or menstrual problems. Nerve sprain is pain in any portion of the body due to sudden twisting of that body part; in most cases, it indicates neck pain caused from not using proper support for the head and neck during sleeping. Sleep paralysis is inability to speak or move after waking up or while falling asleep; it can be temporary or last longer if it happens from extreme fear, which in rural areas happens when a person imagines to have seen something evil from the spirit world in dream or while waking up suddenly during sleeping. *Andrographis paniculata* was used by the FMP to treat fever and loss of appetite. The latter can be an individual problem or arising out from fever. The plant contains the anti-pyretic compound, andrographolide, which has been shown to reduce fever in Brewer's yeast induced pyrexia in rats [38]. Improvement of appetite has been seen with infective hepatitis patients following treatment with the plant [39]. *Lasia spinosa* and *Zingiber officinale* have been reported to possess analgesic and anti-inflammatory properties [40,41]; the reports validate the use of the FMP of these two plants to treat rheumatism. The leaves of *Carica papaya* have lactagogue effect [42]; the FMP used the fruits of the plant (Table 1).

**Table 1:** Medicinal plants and formulations of the FMP from Kushtia district, Bangladesh.

Serial Number	Scientific Name	Family Name	Local Name	Parts used	Ailments treated
1	<i>Andrographis paniculata</i> (Burm.f.) Nees	Acanthaceae	Kalomegh	Leaf	Fever, loss of appetite. Macerated leaves of the plant are taken orally twice daily.
2	<i>Lasia spinosa</i> Thwaites	Araceae	Katakochu	Tuber	Rheumatism. <i>L. spinosa</i> tuber is macerated with ginger (rhizome of <i>Zingiber officinale</i> ) and applied topically.
3	<i>Carica papaya</i> L.	Caricaceae	Papaya	Fruit	Galactagogue. The fruit of <i>C. papaya</i> is taken orally.
4	<i>Crataeva religiosa</i> G.Forst.	Capparaceae	Boinna gach	Whole plant	Snake bite. Hair from cow's tail is run up and down snake bitten area. This is followed by taking out the tooth of the snake if it has broken within the wound. The skin is cut at seven places followed by topical application of paste of whole plants of <i>C. religiosa</i> on the snake bitten area.
5	<i>Commelina benghalensis</i> L.	Commelinaceae	Boro kendra	Root	Hormone disorder (female), usually indicates menstrual disorders. The root of <i>C. benghalensis</i> is macerated with black pepper and is taken twice daily.

6	<i>Cassia sophera</i> L.	Fabaceae	Kalo Kashun-da	Root, Leaf	Gastritis. The root of this plant is macerated with black pepper ( <i>Piper nigrum</i> fruits) and taken orally. Anemia. The leaves are taken orally for reducing anemia.
7	<i>Vitex negundo</i> L.	Lamiaceae	Nishinda	Leaf	Neck pain, Nerve sprain, Sleep paralysis. Leaves of <i>V. negundo</i> , <i>Cissus quadrangularis</i> , <i>Paederia foetida</i> and <i>Datura metel</i> are boiled with mustard oil and peppermint. The decoction is applied topically in the warm state 1-2 times in the morning and evening.
8	<i>Piper nigrum</i> L.	Piperaceae	Gol morich	Fruit	See <i>Commelina benghalensis</i> . See <i>Cassia sophera</i> .
9	<i>Paederia foetida</i> L.	Rubiaceae	Gondho vadalia	Leaf	See <i>Vitex negundo</i> .
10	<i>Datura metel</i> L.	Solanaceae	Kalo dhutura	Leaf	See <i>Vitex negundo</i> .
11	<i>Cissus quadrangularis</i> L.	Vitaceae	Harjora	Whole plant	Ear infection. Macerated whole plant is mixed with mustard oil and applied topically. See <i>Vitex negundo</i> .
12	<i>Zingiber officinale</i> Roscoe	Zingiberaceae	Ada	Rhizome	See <i>Lasia spinosa</i> .

*Crataeva religiosa* has medicinal uses in traditional medicinal system of India to treat snake bite [43]. *Commelina benghalensis* is used to treat infertility in women in many parts of tropical Asia [44]. The fruits of black pepper can be beneficial during gastritis; the fruits also stimulate digestive enzymes, which in turn can lead to amelioration of anemia by stimulating more food consumption; the active ingredient is known to be piperine [45]. Mature fresh leaves of *Vitex negundo* have analgesic and anti-inflammatory properties [46], so the leaves can be used for neck pain or sprain. The same applies to *Cissus quadrangularis*, *Paederia foetida* and *Datura metel* [47-49]. Thus the three plants in combination can be useful against neck pain and nerve sprain. However, their effectiveness against sleep paralysis needs to be scientifically determined. The analgesic and anti-inflammatory properties of *C. quadrangularis* can also make it an effective plant to be used against any pain and inflammation associated with ear infection. Overall, it can be seen from published scientific reports that the various plants used by the FMP are more or less scientifically validated in their therapeutic uses based on their reported pharmacological activities and phytochemical contents. FMPs and FM cannot then be describes as mere 'quackery', although there may be isolated cases of fraudulent practices.

## Conclusion

Our findings suggest that the phytotherapeutic methods of the present FMP were quite consistent with available scientific reports on the pharmacological properties and phytochemical contents of the plants used by the FMP. As such, folk medicine can form the basis for herbal cures and the plants used in folk medicine can prove to be valuable sources of new drugs.

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## Conflict of Interest

The authors declare that there are no conflicts of interest.

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