



ISSN (E): 2320-3862  
ISSN (P): 2394-0530  
NAAS Rating: 3.53  
JMPS 2019; 7(5): 35-38  
© 2019 JMPS  
Received: 16-07-2019  
Accepted: 20-08-2019

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## Solutions to complex diseases may be in common plants: Folk medicinal experiences in Lakshmipur district, Bangladesh

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### Abstract

Only a tiny fraction of the 250,000 or more plant species of the world has been explored for their therapeutic properties. It is quite possible that the solutions to the treatment of many complex diseases may lie in plants that are very commonly seen. The objective of this study was to document the phytotherapeutic practices of a folk medicinal practitioner (FMP) of Lakshmipur district, Bangladesh who used commonly available plants to treat complex diseases. The FMP claimed to cure diseases of heart, kidney and liver with fruits of *Citrullus lanatus* (watermelon). Breast cancer and liver disorders were treated by him with black grapes (*Vitis vinifera* black variety). Plant parts from *Zingiber officinale* (Ginger) and *Artocarpus heterophyllus* (jackfruit) were used by the FMP for treatment of obesity and heart attacks, respectively. Scientific validations of the folk medicinal practices of the FMP can lead to important drug discoveries.

**Keywords:** Phytotherapy, Lakshmipur district, Bangladesh, medicinal plants

### Introduction

Human societies have possibly been dependent on plants for their basic nutritional and medicinal needs since their very advent [1]. It is not clear as to how the plants used for treatment of diseases were selected; it could have been by trial and error basis, or it could have been based on organoleptic properties of plants [2], or it could have been based on watching apes and other animals who partake of plants during diseases [3]. Whatever be the criteria for selection of specific plants for specific diseases, it is true that from time immemorial till the present, plants have formed an important source for new drug discoveries [4].

At a time when the human race were hunter-gatherers, each community still probably had a somewhat defined area for residence and foraging, other areas being claimed by other communities. If this premise holds true, as it is observed even in the hunter-gatherer societies existing today, the primary criteria for holding onto a particular piece of land or territory is the availability of food in the form of plants and animals, and in recent times, other commercial interests like animal fur or selective plant materials or minerals [5]. In that case, a particular society would have more knowledge on the flora and fauna of their territory and this knowledge would include knowledge on the medicinal properties of plants and in some cases, animals. Even in the modern period, a survey conducted in Nepal found that vicinity plays a role in the collection and use of medicinal plants [6].

Since plants have always played a major role in the discovery of new drugs, ethnobotany or study of phytotherapeutic practices of traditional medicinal practitioners (Like folk medicine or tribal medicine practitioners) is an important step towards such drug discovery. Ethnobotany has gained additional importance in recent years because of emergence of new diseases (Against which allopathy has no cure), allopathic drug-resistant vectors, and adverse reactions of allopathic drugs. Moreover, most new allopathic drugs are costly and beyond the reaches of common people. As a result new drug discoveries are essential and for that purpose a closer look at traditional medicinal practices. From these view point, Bangladesh can play a leading role for its more than 5,000 floral species, most of which have not been studied to any suitable extent by scientists. We had been documenting the phytotherapeutic and zootherapeutic practices of folk medicinal practitioners (FMPs) and tribal medicinal practitioners (TMPs) for the last ten years [7-36], but much more needs to be done. The objective of this study was to

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document the phytotherapeutic practices of a FMP in Lakshmipur district, Bangladesh who used commonly cultivated plants to treat complex diseases.

### Methodology

Our informant was Subrata Nag, male, age 57 years, Banchanagor village, Lakshmipur Sadar Upazila (sub-district), Lakshmipur district, Bangladesh, by religion Hindu, practicing for about 30 years with full time occupation as folk medicine practitioner, and obtained folk medicinal training from other FMPs in Dhaka (Bangladesh) and Kolkata (India). Informed consent was first obtained from the FMP as to publication of information provided by him including his name, age and phytotherapeutic information. The FMP used only four well-known and cultivated plants in his formulations. Local names of the plants were obtained from the FMP. Plant parts were also collected, dried and pressed and brought to Dhaka for identification by a competent botanist at the University of Development Alternative. Plant specimens were deposited with the Medicinal Plant Collection Wing of the University of Development Alternative.

### Results

The FMP was observed to use only four plants in his formulations. The results are shown in Table 1. Fruits of *Citrullus lanatus* were used for treatment of heart disorders, kidney disorders, liver disorders, dehydration, and indigestion. Fruits and seeds of *Artocarpus heterophyllus* were used by the FMP to treat heart attack, stroke, burning sensations during urination, and indigestion. Fruits (black variety) of *Vitis vinifera* were used for treatment of breast cancer, liver disorders, and debility. Rhizomes of *Zingiber officinale* were used for treatment of coughs with mucus, kidney problems, indigestion, and obesity. All four plants are grown in Bangladesh. *Vitis vinifera* grows well but produces

very sour fruits; the FMP mentioned that he uses both the locally grown varieties as well imported varieties. *Citrullus lanatus* and *Artocarpus heterophyllus* are cultivated for their fruits and fruits and seeds, respectively. The fruits of the latter plant are cooked and eaten while unripe; the seeds are eaten following cooking, and the ripe fruit pulps are eaten directly. Rhizomes of *Zingiber officinale* are widely used as spice in numerous dishes.

### Discussion

All four plants used by the FMP were cultivated plants. It appears that the therapeutic properties of cultivated plants were more known to the FMP than wild plants. Interestingly, plant parts from all four plants were used by the FMP to treat several complicated diseases to which allopathic drugs do not provide good solutions. The hepatoprotective, anti-hyperlipidemic and anti-oxidant activity of *Citrullus lanatus* has been reviewed [37]. The fruits of *Artocarpus heterophyllus* have anti-oxidant activity, which among other benefits can reduce oxidation of low-density lipoprotein (LDL) and so reduce the chances of atherosclerosis [38]. Fruits of *Vitis vinifera* (grapes) have anti-cancer and anti-oxidant activity [39]. The hepatoprotective effect of red grape seed extract has been demonstrated [40]. Metabolic syndrome including diabetes, dyslipidemia and cardiovascular diseases has become a major problem in the world in recent years. Rhizomes of *Zingiber officinale* (ginger) have been shown to have beneficial effects in metabolic syndrome and obesity [41]. Taken together, it is quite clear that although the plants selected by the FMP were cultivated and quite common, their therapeutic effects were substantial and more importantly, they were beneficial against complicated diseases. It is very much likely considering their plethora of pharmacological activities that the FMP's selection of these plants are scientifically validated.

**Table 1:** Medicinal plants and formulations of the Lakshmipur FMP.

Serial Number	Scientific Name	Family Name	Local Name	Parts used	Ailments treated
1	<i>Citrullus lanatus</i> (Thunb.) Matsum. & Nakai	Cucurbitaceae	Tormuz	Fruit	Heart disorders, kidney disorders, liver disorders, dehydration, indigestion. Ripe fruits are taken daily orally.
2	<i>Artocarpus heterophyllus</i> Lam.	Moraceae	Kanthal	Fruit, seed	Heart attack, stroke, burning sensations during urination, indigestion. Ripe fruits are orally consumed. Seeds are cooked and eaten as vegetable.
3	<i>Vitis vinifera</i> L. (black variety)	Vitaceae	Kalo angur	Fruit	Breast cancer, liver disorders, debility. Ripe fruits are orally taken daily.
4	<i>Zingiber officinale</i> Roscoe	Zingiberaceae	Ada	Rhizome	Coughs with mucus, kidney problems, indigestion, and obesity. Rhizomes are dried, powdered, mixed with water and taken orally before meals. Alternately, rhizomes are boiled in water and the water taken orally before meals.

### Acknowledgement

The authors are thankful to the FMP for providing information.

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