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Medicinal food plants in Brahmanbaria district, Bangladesh

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Abstract

Various traditional medicinal systems in different parts of the world follow the Hippocratic adage “Let food be thy medicine, and let medicine be thy food.” Bangladesh is no exception and although usages of food as medicine and medicine as food are not so common, yet such practices exist. Such use can be beneficial in both reducing treatment cost and increasing the acceptability of a given medicine, given the high costs and associated adverse effects of many modern i.e. allopathic medicines. A survey conducted in a village in Brahmanbaria district, Bangladesh revealed that a folk medicinal practitioner (FMP) is using several food plants for treatment or prevention of gastrointestinal disorders, allergy, and abscess in eyes. Scientific validation of such traditional uses can prove to be of value not only in discovery of new drugs but also provide more confidence in the efficacy of traditional medicines.

Keywords: Folk medicine, functional food, medicinal food plants, Brahmanbaria, Bangladesh

Introduction

“Let food be thy medicine, and let medicine be thy food.” The quotation has been attributed to Hippocrates ^[1], considered by most as the father of modern medicine. Food in the form of whole plants or plant parts for prevention and treatment of various diseases has been a common feature in the traditional medicinal practices (including folk medicine or FM) in a number of regions of the world. A number of green leafy vegetables are reportedly used to treat disorders like digestive disorders in Kolhapur district, Maharashtra, India ^[2]. Such folk food medicinal (or folk medicinal food) plants are also known as nutraceuticals or functional foods; a study in Arunachal Pradesh, India documented the use of 36 folk medicinal food plants ^[3]. The Indian traditional medicinal system, Ayurveda, uses a number of food plants as medicinal ^[4].

Bangladesh is home to a number of traditional medicinal systems among which are folk medicine (FM) and tribal medicine (TM). Folk medicinal practitioners (FMPs) practice among the mainstream Bengali-speaking population, while tribal medicinal practitioners (TMPs) practice among various tribes; however, the major element in their practice is phytotherapy or treatment with plants, which may include food plants ^[5-38]. Using food plants as medicine can confer a number of advantages for persons residing in a developing country like Bangladesh, where the rural population and even the semi-urban population lack access to or cannot afford basic medical amenities. Modern clinics and allopathic doctors are mostly absent in the approximately 86,000 villages present in the country. However, since the country is still agriculture-based, medicinal food plants can be obtained with comparative ease and can be a boon to the health of the population. The objective of the present study was to document the medicinal food plants used by a FMP in Birgaon village of Brahmanbaria district, Bangladesh.

Materials and Methods

The survey was conducted during October-November 2019. The Kaviraj (FMP) Bacchu Mia, resided in Gazirkandi Village, Brahmanbaria district, Bangladesh and was known to one of the authors (AH). Prior Informed Consent was obtained from the FMP to disseminate any information obtained both nationally and internationally. Problems were not encountered in obtaining the information since the FMP was known to AH for a number of years. Actual interviews were conducted with the help of a semi-structured questionnaire and the guided-field walk method of Martin ^[39] and Maundu ^[40]. In this method, the FMP took the interviewers through areas (including fallow fields, cultivated plots, roadsides, and small tracts of forests) from where he collected his medicinal plants.

The FMP showed the authors the plants that he used and described their uses and also provided their local names. Plants were photographed on the spot, and plant specimens collected, dried and brought to Dhaka for identification at the Bangladesh National Herbarium. It was noted that of the three medicinal food plants shown by the FMP, two were quite unique in being used as food.

Results

Brahmanbaria district with an area of 1927.11 square kilometers is located in between 23°39' and 24°16' north latitudes and in between 90°44' and 91°51' east longitudes (Figure 1). The FMP's village was located in Nabinagar Upazila (sub-district), the Upazila having an area of 353.66 square kilometers and a population of 420,383 people according to Bangladesh Population Census 2001, Bangladesh Bureau of Statistics.

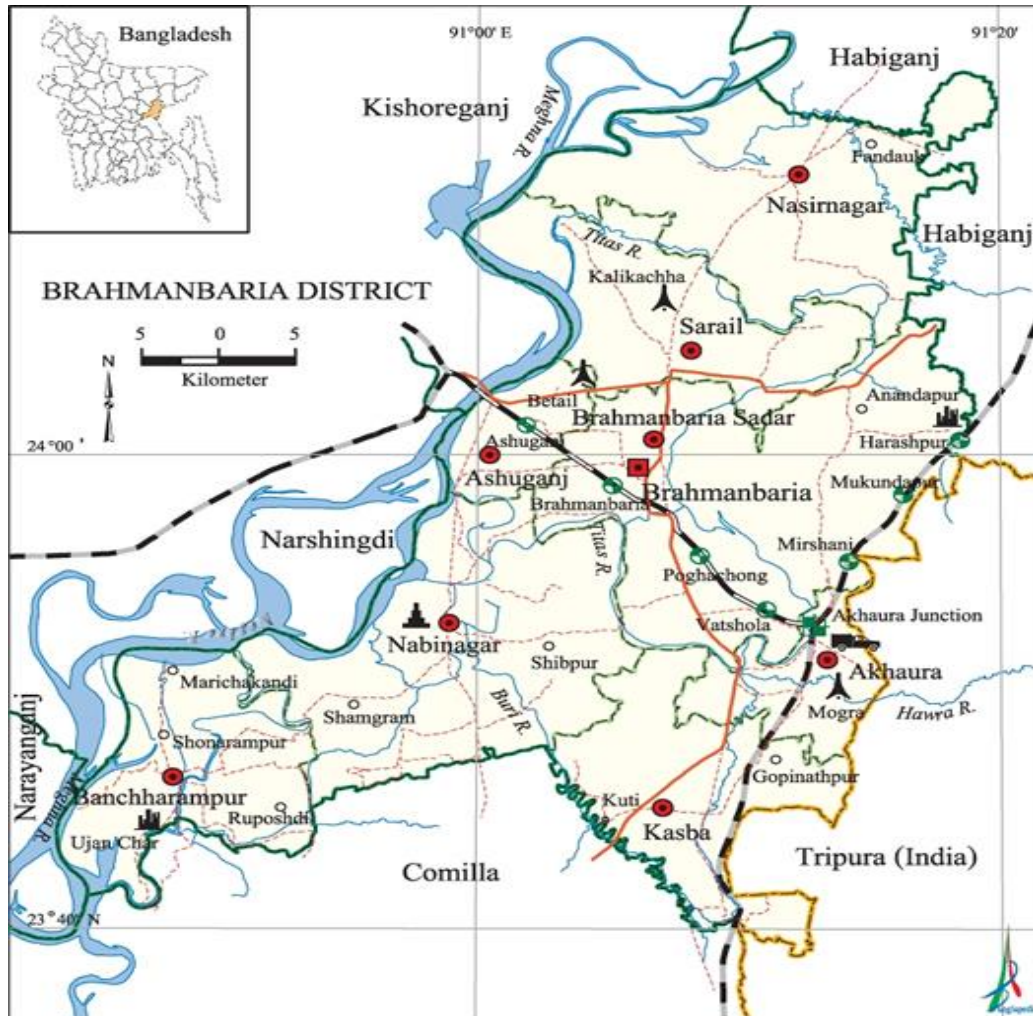


Fig 1: Brahmanbaria district. Inset: Map of Bangladesh with Brahmanbaria district shown in yellow.

A total of three medicinal food plants were obtained from the FMP. Their scientific names, families and other information are shown in Table 1. All three plants were somewhat unique

in not being mentioned or mentioned rarely in our previous ethnomedicinal surveys [5-38].

Table 1: Plants consumed in Gazirkandi village, Brahmanbaria district, Bangladesh for both nutrition and various disorders.

Serial Number	Scientific Name [Accession Number]	Family Name	Local Name	Parts used	Ailments treated
1	<i>Alternanthera paronychioides</i> A. St.-Hil. [DACB-51042]	Amaranthaceae	Kheta shak	Young aerial parts, whole plant	Nutrition. Young aerial parts are fried and taken as vegetable. Diarrhea. One cup of juice obtained from whole plant is taken orally on an empty stomach for 5 consecutive days.
2	<i>Alternanthera philoxeroides</i> (Mart.) Griseb. [DACB-51037]	Amaranthaceae	Haicha	Aerial parts	Nutrition, to prevent gastrointestinal problems. Aerial parts are cooked and eaten as vegetable.
3	<i>Commelina longifolia</i> (Lam.) [DACB-51040]	Commelinaceae	Kanaia shak	Aerial parts of young plants, leaf	Nutrition. Young aerial parts are fried and consumed as vegetable. Allergy. 2-3 leaves are chewed and taken orally on an empty stomach for 7 consecutive days. Abscess in eyes. Leaf juice is topically applied.

Of the three plants, two belonged to the Amaranthaceae family, and one to the Commelinaceae family. *Alternanthera paronychioides* (Figure 2) was used to treat diarrhea, *Alternanthera philoxeroides* (Figure 3) was used to prevent gastrointestinal problems (including diarrhea, dysentery, bloating, abdominal pain), and *Commelina longifolia* (Figure 4) used to treat allergy and abscess in eyes. By abscess in eye was meant stye, which is an infection of a hair follicle gland at the base of an eyelash. Notably, this infection can progress and cause redness and irritation around the abscess, with development of pain and eyelid swelling. The FMP clearly mentioned that abscess in the eye did not arise from any allergic conditions.

All three plants (or plant parts, particularly the aerial parts) were frequently consumed by the villagers as leafy vegetables. It is further to be mentioned that these three plants are among the cheap leafy vegetables available in the kitchen markets of Dhaka city (capital of Bangladesh) and rarely consumed by affluent people of the country. It is to be further mentioned that with the exception of *Alternanthera philoxeroides*, this is the first time we have come across the other two plants being consumed as vegetables in Bangladesh in our various surveys, so their nutritional use(s) appear to be rare in other parts of the country.

Discussion

Very little is known for *Alternanthera paronychioides*. It has been reported from Bangladesh that the plant is used to prevent cardiovascular disorders in some parts of Bangladesh, the mode of use being consuming the plant following cooking [41]. In South Orissa, India, *Alternanthera philoxeroides* is used to treat coughs and intestinal worms [42]. A related plant, *Alternanthera sessilis* is used by tribal people in Pakistan to treat diarrhea [43]; this study may be the first instance of reporting *Alternanthera paronychioides* and *Alternanthera philoxeroides* for use in gastrointestinal disorders. *Commelina longifolia* is another plant for which nutritional or ethnomedicinal information is lacking. Taken together, it

appears that the three plants used by the FMP can be said to be unique medicinal food plants of Bangladesh.



Fig 2: *Alternanthera paronychioides*



Fig 3: *Alternanthera philoxeroides*



Fig 4: *Commelina longifolia*

Conclusion

The plants mentioned by the FMP deserve scientific research. Gastrointestinal disorders and allergy are common problems throughout the world and medicinal food plants like the three mentioned in this study can simultaneously provide the population with affordable sources of nutrition as well as alleviation of gastrointestinal disorders and allergy.

Conflicts of interest

The authors declare that there are no conflicts of interest.

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