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Phytotherapeutic Practices of a Folk Medicinal Practitioner in Tangail District, Bangladesh: Comparison with Ayurvedic Uses

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Abstract

Objectives: The objective of the present study was to document the therapeutic uses of plants by a folk medicinal practitioner (FMP) in Tangail district, Bangladesh and compare such uses with Ayurvedic uses.

Methods: Interviews of the FMP was conducted with the help of a semi-structured questionnaire and the guided field-walk method. Plant specimens were photographed and identified by a competent botanist and deposited at the Medicinal Plant Collection Wing of the University of Development Alternative.

Results: The FMP was observed to use a total of nine plants to treat a number of ailments including diabetes, obesity, rheumatism, filariasis, gastrointestinal disorders, reproductive disorders, cardiovascular disorders, respiratory disorders, abscess, thyroid problems, snake bite, fever, high cholesterol, aging, and cancer.

Conclusion: Comparison of the folk medicinal uses of the plants with established Ayurvedic uses suggests that at least a part of the knowledge of the FMP may have been derived from Ayurvedic practices.

Keywords: Folk Medicine; Ayurveda; Medicinal Plants; Tangail; Bangladesh

Introduction

Folk medicine (FM) and tribal medicine (TM) are essentially the same in nature, the only difference being that folk medicine is practiced by the mainstream population while tribal medicine is practiced by tribes. Folk medicine is common in Bangladesh and several reasons exist for that. First, FM can be practiced by any person with the knowledge or confidence for practicing. Second, folk medicinal practitioners (FMPs) do not need any institutional degree or training, or permission from any authorities for practicing. The soundness of their practice is judged by the people or patients; if instead of cure, treatment results in fatality or major adverse effects, the FMP is quickly forced to leave the area if not practice. Third, folk medicine is generally transmitted orally from generation to generation with enrichment of knowledge in every generation. Fourth, although FMPs may use diverse variety of treatment methods including use of amulets or incantations, their main therapeutic mode is with plants, which are on the whole easily available in the surrounding areas. Fifth, treatment with plants makes the treatment readily available and affordable to all groups of patients irrespective of their financial statuses. Needless

to say, the variety of FMPs and the modes of their practices (use of plants, animals, minerals, amulets, and incantations, alone or in combination) make FM an interesting area for study with huge potential for drug discovery; we had been conducting such studies for several years now [1-30].

Ayurveda, otherwise known as the 'science of life' originated in India more than 5,000 years ago [31]. Around 1,000 BC, Ayurvedic knowledge took on an organized form through two great Ayurvedic physicians and their compilations, namely the Charaka Samhita and the Sushruta Samhita. Although Ayurveda takes a holistic approach to the prevention and cure of diseases, this traditional medicinal system uses plants as their main sources of medicines. Ayurveda uses more than 1200 medicinal plants in mono-herbal and polyherbal preparations [32]. Folk medicine, although there are no written records, have also been practiced from time immemorial and so must have had interactions with Ayurveda. It was thus of interest to find out from the folk medicinal practices of a randomly selected FMP as to whether the plants selected by the FMP are also mentioned in the Ayurveda treatises for treatment of the same or similar diseases. Such documentation can cast light on the origins of both folk medicine and Ayurveda.

Methods

The FMP interviewed was Mujibur Rahman, male, age 60 years, village-Korotia, Upazila-Tangail, District – Tangail, Bangladesh. His main occupation was farming; he practiced folk medicine as a source of extra income. He had completed his Higher Secondary Certificate Examination and so can be considered as literate, and he had been practicing for 30 years. Informed consent was initially obtained from the FMP to publish his name and any information provided both nationally as well as internationally. Actual interviews were conducted with the help of a semi-structured questionnaire and the guided field-walk method of Martin [33] and Maundu [34]. In this method, the FMP took the interviewers in guided field-walks through forest areas or his own medicinal plants garden from where he collected his medicinal plants, pointed out the plants, and described their uses. Plants were photographed and plant samples collected and dried and brought back to the University of Development Alternative (UODA) for proper identification by a competent botanist. Interviews were conducted of the FMP in Bengali, the language being spoken by the interviewers as well as the FMP. Voucher specimens were deposited at the Medicinal Plant Collection Wing of the University of Development Alternative.

Results and Discussion

The FMP was observed to use a total of nine plants in mono-herbal formulations to treat a number of ailments including diabetes, obesity, rheumatism, filariasis, gastrointestinal disorders, reproductive disorders, cardiovascular disorders, respiratory disorders, abscess, thyroid problems, snake bite, fever, high cholesterol, aging, and cancer. The results are shown in Table 1.

Serial Number	Scientific Name	Family Name	Local Name	Parts used	Ailments treated
1	*Aristolochia indica* L.	Aristolochiaceae	Ishwarmul	Root	Diabetes, obesity, rheumatism. Roots are dried and powdered thoroughly. 5-10g of the powder is mixed with 250 ml water and taken orally twice daily.
2	*Calotropis procera* (Ait.) Ait.f.	Asclepiadaceae	Akondo	Root, flower	Diarrhea, filariasis, contraceptive, to increase digestion. 15-20 ml root juice is taken orally with water. 10g of ash obtained from burnt flower is taken orally with water.
3	*Bombax ceiba* L.	Bombacaceae	Shimul	Root, bark, flower	Constipation, low sperm count, heart disorders, diarrhea. Juice obtained from root and bark (minimum 7-12g) is mixed with water and sugar and taken orally twice daily. Burns. Flower juice is applied topically to burnt spot.
4	*Terminalia arjuna* (Roxb.) Wight & Arn.	Combretaceae	Arjun	Bark	Cardiovascular disorders, hypertension, coughs, diarrhea, formation of pus

					(abscess). Bark is thoroughly dried and powdered. It is then taken orally with milk. Alternately, bark is soaked in water overnight. The water is taken the following day twice orally.
5	*Clitoria ternatea* L.	Fabaceae	Oporajita	Root, leaf	To cleanse bowels, diuretic, thyroid problems, cough, snake bite. Juice from leaf and root (one to two spoonfuls) is mixed with root bark and water and taken orally for 4-5 days twice daily.
6	*Mucuna pruriens* (L.) DC.	Fabaceae	Alkushi	Seed	Low semen count, menopause, rheumatism. Paste of seeds is mixed with sugar and milk or water. Two spoonfuls of the paste is taken orally twice daily.
7	*Tamarindus indica* L.	Fabaceae	Tetul	Fruit (ripe or unripe), seed	Fever, weakness of heart, hypertension, high cholesterol, rheumatism, indigestion. Ripe or unripe fruits are taken orally. Seeds are dried, powdered, mixed with water and taken orally.
8	*Trigonella foenum-graecum* L.	Fabaceae	Methi	Seed, leaf	Indigestion, diabetes, high cholesterol, anti-aging, heart disorders. Seeds are dried, powdered and orally taken with water. Seeds are also used as spice. Leaves are cooked and eaten as vegetable.
9	*Withania somnifera* (Linn.) Dunal	Solanaceae	Ashwagandha	Leaf	Diabetes, cancer. Dried and powdered leaves or leaf juice is taken orally twice daily.

Table 1: Medicinal plants and formulations of the Tangail FMP.

What was interesting is that the same plant was observed to be used by the FMP for treatment of diverse diseases. For instance, the roots of *Aristolochia indica* were used to treat diabetes, obesity, and rheumatism in a similar formulation. Plants contain secondary metabolites (phytochemicals) with each metabolite potentially having a particular pharmacological effect upon administration into an animal. This effect can be toxic or beneficial. As such, a plant can potentially have multiple beneficial (or toxic or mixed) effects, which beneficial effects can prove useful in the treatment of various diseases of a diverse nature. Root extract of *A. indica* has been reported to be anti-diabetic and hypoglycemic [35]. The plant also has anti-inflammatory properties [36], making it useful in treatment of rheumatism. In Ayurveda, the plant is known as Ishwari. The plant has been mentioned in both Charaka and Sushruta Samhitas. In Ayurveda, the plant's root is considered useful in intermittent fever, children's bowel complaint, pain in the joints, and for the treatment of snake bite poisoning [37,38].

The FMP used the roots and flowers of *Calotropis procera* to treat diarrhea and filariasis, and to aid digestion and as a contraceptive. In Ayurveda (Ayurvedic name is arka), the flowers are used as a milk drink to treat complaints like coughs and catarrh, asthma, indigestion, and cholera. The powdered root is used to treat bronchitis, asthma, leprosy, eczema and elephantiasis [39]. It is to be noted that lymphatic filariasis is also known as elephantiasis.

The root, bark, and flowers of *Bombax ceiba* were used by the FMP to treat constipation, low sperm count, heart disorders, and diarrhea. Ayurvedic uses of the plant include intrinsic hemorrhage, bleeding piles, diarrhea, sinus, and to induce abortion [40]. *Terminalia arjuna* bark was used by the FMP for treatment of cardiovascular disorders, hypertension, coughs, diarrhea, and formation of pus (abscess). In Ayurveda, the bark particularly is considered useful for treatment of hypertension and further used as cardio protective and as a tonic to heart diseases. Bark powder is used to cure myocardial infarction, angina, coronary artery diseases, and lowering high cholesterol [41].

Clitoria ternatea (Ayurvedic name aparajita) is used in Ayurveda as a memory enhancer, nootropic, anti-stress, anxiolytic, anti-depressant, anti-convulsant, tranquilizing and sedative agent (42). The FMP used the plant to cleanse bowels, diuretic, thyroid problems, coughs, and snake bite. If the Ayurvedic uses are correct from the medical point of view, the anxiolytic and sedative properties of the plant can prove useful during snake bites. Not all snakes are poisonous, but even a non-poisonous snake bite can induce a sense of anxiety and concern about possible imminent death in people, more so when the identity of the snake is unknown. Notably, snake bite is a major problem in Bangladesh with about 623.4 bites per 100,000 person years [42]. The flowers and stems are also used to treat snake bites in ethnic recipes of India [43].

Mucuna pruriens is known in Ayurveda as kapikacchu. The major uses of seeds of the plant in Ayurveda are as an aphrodisiac, spermatogenic, cardiotonic and to form normal stool and increase strength [44]. The FMP used seeds of the plant to treat low semen count, menopause, and rheumatism. *Tamarindus indica* is known in Ayurveda as amleeka. Ayurvedic uses of the fruit include treatment of anorexia, diarrhea, bleeding piles, rectal prolapse, coughs, wounds, fractures, freckles, leucorrhea, coryza, abdominal distention and diseases due to aggravation of 'vata' like amenorrhea, edema, ringworm and snake poison [45]. The FMP used the fruits and seeds for treatment of fever, weakness of heart, hypertension, high cholesterol, rheumatism, and indigestion.

In Ayurvedic medicines, *Trigonella foenum-graecum* (known as methi in Ayurveda) is used for the treatment of bronchitis, rheumatoid arthritis, abscesses or wounds and digestive abnormalities [46]. The FMP used the leaves and seeds of the plant to treat indigestion, diabetes, high cholesterol, anti-aging, and heart disorders. A number of the uses by the FMP are supported by scientific studies. For instance, the anti-hyperglycemic effect of seeds of the plant has been reported in alloxan diabetic rats [47]. The plant also has cardio-protective and lipid-lowering effects [48]. The FMP used the leaves of *Withania somnifera* to treat diabetes and cancer. The Ayurvedic name of the plant is ashwagandha. In Ayurveda, the plant is considered a 'rasayana' herb, which acts non-specifically to increase health and longevity. The plant is used as an aphrodisiac and is used for the treatment of nervous exhaustion, memory related conditions, insomnia, skin problems and coughing [49].

Conclusion

A perusal of the scientific literature suggests that Ayurveda and folk medicine has common grounds but have quite possibly evolved and still evolving quite independently of each other. FMPs in Bangladesh are familiar with Ayurvedic texts and quite a few in our various surveys have mentioned that they have read and followed the Ayurvedic texts as to selection of plants. The mutual interaction between Ayurvedic physicians and FMPs need to be encouraged towards a greater understanding and applications of herbal medicine, for the mainstay of both systems is phytotherapy.

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