



Medicinal plants of a Tonchongya tribal healer in Rangamati district, Bangladesh

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ABSTRACT

The Tonchongyas are a small tribal community who can be found in scattered localities in the various districts of Chittagong Hill Tracts in the southeastern part of Bangladesh. Very little is known about the tribal medicinal practices of this tribe. The objective of the present study was to document the medicinal plants used by a Tonchongya tribal healer (TTH) practicing in Rangamati district in the Chittagong Hill Tracts. Interviews of the TTH were carried out with the help of a semi-structured questionnaire and the guided field-walk method. The TTH was observed to use a total of 13 plants in his formulations of which 12 could be identified. These plants were distributed into 8 families with the Fabaceae family contributing the maximum number of species. The plants were used by the TTH to treat a wide variety of ailments, which included gastrointestinal disorders, cancer, pain, enlargement of spleen, sinking of voice, physical weakness, biliary disorders, piles, leucorrhoea, urinary disorders, menstrual problems, poisoning, fever, helminthiasis and skin disorders. The use of different parts of the same plant to treat different ailments suggests that the TTH possessed quite extensive knowledge on the medicinal properties of the plants that he used. As such, the plants merit scientific attention for further research leading to possible drug discoveries.

Key words: Tonchongya, Rangamati, ethnomedicine, medicinal plants

INTRODUCTION

Chittagong Hill Tracts (CHT) region lies in the southeastern part of Bangladesh and is home to a number of tribal communities like the Chakmas, Marmas, Murongs, Rakhains, and the Tonchongyas. The Chakma community forms the largest tribal community with the Tonchongya community among the smaller tribal groups in terms of population size. The various tribal communities are spread throughout the various districts of the Chittagong Hill Tracts region.

CHT region is also rich in floral species, many of which are used in their traditional medicinal practices by the tribal medicinal practitioners. Many of the floral species are yet to be identified and documented. There has not been an adequate amount of ethnomedicinal surveys among the various tribes. While the Chakma tribal practices have been to some extent documented [1, 2], the other tribes, particularly the Tonchongyas remain to be studied in details as to their traditional medicinal practices. Adequate documentation of traditional medicinal practices is important for

most such practices use medicinal plants for treatment, and many modern medicines have been discovered from close observations of traditional medicinal practices of indigenous communities [3].

We had been systematically documenting the medicinal plants and other materials used in various traditional including tribal medicinal practices for some time [4-17]. The objective of the present study was to document the medicinal plants used and the diseases treated by a Tonchongya tribal healer (TTH) practicing in Rangamati district of Bangladesh.

EXPERIMENTAL SECTION

The Tonchongya tribal community was located in Tonchongya Para, Bhangsuri Shukna Bil in Rangamati district of Bangladesh. The community had one TTH, namely Nil Kumar Tonchongya, by gender male, age 40 years, practicing for 20 years, learnt his practice techniques from his father, and claimed that medicinal practice was generational in his family. Prior Informed Consent was first obtained from the TTH. The TTH was explained as to the nature of our visit and consent obtained to disseminate any information obtained both nationally and internationally. Interviews were conducted during the end of 2014 in the Bengali language, which was spoken by both the TTH as well as the interviewers. Actual interviews were conducted with the help of a semi-structured questionnaire and the guided field-walk method of Martin [18] and Maundu [19]. In this method, the TTH took the interviewers on guided field-walks through areas from where he collected his medicinal plants, pointed out the plants, and described their uses. Plant specimens were photographed, collected, pressed and dried and brought to Dhaka, where they were identified at the Bangladesh National Herbarium.

RESULTS AND DISCUSSION

The TTH was observed to use a total of 13 plants in his various formulations to treat a number of ailments. Of the 13 plants, one could not be identified at the Herbarium and the species of another plant could not be determined although the genera name was given by the Herbarium. The 12 identified plants were distributed into eight families of which the Fabaceae family contributed the largest number of plant species with 4 species. The results are shown in Table 1.

The various plants were used by the TTH to treat a wide variety of ailments, which included gastrointestinal disorders, cancer, pain, enlargement of spleen, sinking of voice, physical weakness, biliary disorders, piles, leucorrhoea, urinary disorders, menstrual problems, poisoning, fever, helminthiasis and skin disorders. It is interesting that one plant, namely *Alocasia cucullata* was used to treat colon cancer, although this disease was not diagnosed by the TTH through modern diagnostic procedures. A *Curcuma* sp. was also used to treat cancer.

The TTH used mainly one plant or plant part to treat a single or multiple diseases. The sole exception to this was his use of floral juice of *Spilanthes acmella* with clove juice of *Allium sativum* to treat toothache. However, the TTH demonstrated quite extensive knowledge on the medicinal properties of various plant parts from the same plant as evidenced by his use of leaf and root juice of *S. acmella* to treat helminthiasis versus use of floral juice to treat toothache. Other instances of the TTH's use of different plant parts to treat different diseases could be observed in his treatment of physical weakness, abnormal behavior, sinking of voice, bile turning the color of blood, and passing of blood with stool with roots of *Ipomoea quamoclit*, but treating bleeding from cuts and wounds and piles with leaves from the same plant.

The TTH treated colon cancer with tubers of *Alocasia cucullata*. Interestingly, whole water extract of roots of the plant has been shown to attenuate tumor growth in mice tumor models [20]. As such, the use of this plant to treat cancer by the TTH appears to have scientific validation. The tuber of the same plant was used by the TTH to treat stomach pain. Although any analgesic or gastroprotective studies are yet to be carried out with the plant, ethanolic extract of rhizomes of a related species, *Alocasia indica*, has been reported to possess analgesic and anti-inflammatory properties [21].

Table 1. Medicinal plants and formulations of the Tonchongya healer of Rangamati district, Bangladesh

Serial Number	Scientific Name	Family Name	Local Name	Parts used	Disease, Symptoms, Formulations, and Administration
1	<i>Alocasia cucullata</i> (Loureiro) G. Don	Araceae	Bish kochu	Tuber	Stomach pain, colon cancer. A piece of tuber equal in size to a paddy seed is inserted into a ripe banana and swallowed. Note that chewing the tuber slice may result in fatality.
2	<i>Spilanthes acmella</i> (L.) Murr.	Asteraceae	Gang ochun	Flower, leaf, root	Toothache. Flower juice of <i>Spilanthes acmella</i> is mixed with equal amount of juice obtained from crushed <i>Allium sativum</i> cloves. One teaspoonful of the juice is taken orally for 1-2 days. Helminthiasis. Leaf and root juice is orally taken (one teaspoonful for 1-2 days).
3	<i>Tecoma capensis</i> (Thunb.) Lindl.	Bignoniaceae	Jongli bangcha	Leaf, root	Stomach pain, diarrhea, enlargement of spleen. Leaves and roots are made into a paste with a small amount of water. One teaspoonful of the paste is taken orally thrice daily for 1-2 days.
4	<i>Ipomoea quamoclit</i> L.	Convolvulaceae	Toru lota	Root, leaf	Physical weakness, abnormal behavior, sinking of voice, bile turning the color of blood, passing of blood with stool. Two teaspoonfuls of root paste are orally taken with cow milk thrice daily for a day. Bleeding from cuts and wounds. Leaf paste is topically applied. Piles. Leaf juice is orally taken.
5	<i>Abrus precatorius</i> L.	Fabaceae	Shada khaid, Gunja	Root, leaf	Leucorrhea. Roots are crushed to obtain a white paste, which is mixed in ½ glass of water. A small amount of the mixture is taken orally with ½ glass of water thrice daily for 7 days. Hypnotism. Leaf juice is administered orally to hypnotize somebody.
6	<i>Clitoria ternatea</i> L.	Fabaceae	Omayyah	Root	Burning sensations and pain during urination, pain, infections in urinary tract. Root paste is orally taken.
7	<i>Crotalaria verrucosa</i> L.	Fabaceae	Gang chompul	Root	Bloating in children, gastrointestinal disorders, gynecological disorders. Two teaspoonfuls of root juice are taken orally for one day. Excessive bleeding during menstruation. Two teaspoonfuls of root juice are taken orally for 2-3 days.
8	<i>Senna occidentalis</i> (L.) Link	Fabaceae	Bishoma	Whole plant, root	Any type of poisoning within the body. Two teaspoonfuls of root paste are taken orally once. Poisonous insect or snake bite. Paste of whole plant is topically applied to bitten area.
9	<i>Allium sativum</i> L.	Liliaceae	Roshun	Clove	See <i>Spilanthes acmella</i> .
10	<i>Clerodendrum viscosum</i> Vent.	Verbenaceae	Tita baid	Leaf, root	Fever, helminthiasis, severe skin infection. Leaf juice is orally taken. Stomach pain. Root juice is orally taken.
11	<i>Alpinia galangal</i> Willd.	Zingiberaceae	Palek	Rhizome	Stomach pain, to expedite coming out of placenta after childbirth. A small slice of rhizome is chewed with table salt and taken orally for three consecutive days.
12	<i>Curcuma</i> sp.	Zingiberaceae	Lal peyaz	Bulb, stem	Cancer. Bulb is slightly boiled in a small amount of water followed by making a mixture. A red hot iron rod is immersed in the mixture for 5-10 seconds. ½ cup of the mixture is taken twice daily in the morning and evening for 1-2 days. Loss of appetite. Two teaspoonfuls of crushed stem are taken orally.
13	Unidentified	Unidentified	Chumbusi tain	Leaf	Skin eruptions, itches, skin infections. Leaves are put in an earthen pot and heated over a fire till they are reduced to ashes. Ash is applied topically to skin eruptions for 3-4 days. Ash is mixed with water and taken orally for 3-4 days for itches and skin infections.

The TTH used flowers of *Spilanthes acmella* to alleviate toothache. In fact, the plant is known in English as the toothache plant because of its long traditional use in relieving toothache; the plant has pharmaceutical uses as an anti-toothache formulation for pain relief, swelling and gum infections, and periodontosis [22]. The medicinal claims of *Allium sativum* cloves have also included claims for toothache treatment [quoted in 23]. *Spilanthes acmella* is also used in Indian traditional medicines for treatment of helminthiasis [24]. Thus the use of this plant against helminthiasis by the TTH is also known in India.

Other plants used by the TTH have reports of similar traditional uses or can be seen to be scientifically validated based on existing scientific reports. Aerial parts of *Abrus precatorius* have been reported as used in traditional medicines of India for treatment of leucorrhea [25]; the TTH, however, used roots of the plant for the same purpose. Root juice of *Clerodendrum viscosum* was used by the TTH to treat stomach pain. The analgesic and antiinflammatory effects of roots of the plant have been described in male adult Swiss albino mice [26].

An unidentified *Curcuma* sp. was used by the TTH to treat cancer. Species belonging to the *Curcuma* genera are reportedly useful against a wide variety of cancers; moreover these plants contain curcumin as one of the major components. Curcumin has been found useful in treatment of many types of cancer including breast cancer [27]. Methanolic extract of leaves and rhizomes of *Curcuma amada* have been reported to exhibit cytotoxic activity against breast cancer cell lines [28]. Reversal of SGC-7901/VCR induced subcutaneous transplanted tumor in nude mice has been observed with extract of *Curcuma wenyujin* [29]. Inhibitory effect of *Curcuma purpurascens* rhizome has been observed on HT-29 colon cancer cells [30]. Thus the *Curcuma* sp. used by the TTH may be a promising plant for anticancer drug development.

CONCLUSION

The Tonchongya tribal healer apparently had a good knowledge on the medicinal properties of plants and their various parts. The most interesting observation to come out from this study was the TTH's use of two plants for the treatment of cancer. While it may be argued as to how the TTH could diagnose cancer, nevertheless the plants merit scientific research. Cancer has been known from ancient times and is recognized in the Ayurvedic literature, which dates back from three to five thousand years ago. Thus the plants used by the TTH can be potential sources for new drugs.

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