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Research Article

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Medicinal plants used by a Tonchongya tribal community at Taknatala village in Rangamati District, Bangladesh

Nasreen Jahan[1], Md. Ahmed Hossain[1], S. M. Neaz Mahmud[1], Jatan Tongchongya[1], Mohammad Nazmul Hasan[1] and Mohammed Rahmatullah[2]*

[1]Department of Biotechnology and Genetic Engineering, Mawlana Bhashani Science and Technology University, Santosh, Tangail, Bangladesh
[2]Department of Pharmacy, University of Development Alternative, House 78, Road 11A, Dhanmondi, Dhaka, Bangladesh

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ABSTRACT

The Tonchongyas are a small tribal community who reside in scattered areas of Rangamati, Bandarban, Cox's Bazar and Khagrachaari Districts in the southeastern part of Bangladesh. The scattered communities have their own tribal healers whose uses of medicinal plants for treatment of various diseases vary considerably. The objective of the present study was to document the ethnomedicinal practices of Tonchongya healers of the tribe living in Taktanala village in Rangamati District. Ethnomedicinal information was obtained from the healers with the help of a semi-structured questionnaire and the guided field-walk method. The three healers of the tribal community were observed to use a total of 34 medicinal plants distributed into 23 families in their treatment of various diseases, which included gastrointestinal disorders, helminthiasis, pain, vomiting, cuts and wounds, malaria, urinary problems, rheumatism, respiratory tract disorders, oral lesions, skin diseases, hair loss, physical weakness, anemia, bone fracture, pox, jaundice, burning sensations in the chest and vaginal infections. The tribal medicinal knowledge of the Tonchongyas can prove useful in the discovery of novel drugs from the plants since most of these plants have been studied only scarcely by scientists.

Key words: Tonchongya, ethnomedicine, tribal practices, Rangamati, Bangladesh

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INTRODUCTION

The Tonchongyas are a small tribal community residing in the various districts of Rangamati, Bandarban, Cox's Bazar and Khagrachaari in the Chittagong Hill Tracts in the southeastern part of Bangladesh. They are often confused with the more numerous Chakma tribal people, who also reside in the same districts. However, the Tonchongyas maintain their separate identities and follow their own traditional customs, which include their traditional medicinal practices. Interestingly, the tribal healers among the scattered Tonchongya communities, although maintaining their own tribal practices, differ considerably in their selection of medicinal plants to treat diseases as has been observed in several surveys conducted previously on this tribe [1-3]. This is despite the areas having more or less the same floral species. It is thus of interest to conduct ethnomedicinal surveys among as many Tonchongya communities as possible to understand their full extent of knowledge on medicinal plants.

We had been conducting extensive ethnomedicinal surveys among the folk and tribal medicinal practitioners of Bangladesh for a number of years [4-23]. The objective of the present survey was to document the usage of

medicinal plants by healers of a Tonchongya tribal community residing in Taktanala village in Rangamati district, Bangladesh.

EXPERIMENTAL SECTION

The Tonchongya tribal community was located in Taktanala village in Rangamati District, Bangladesh. The community had three tribal medicinal practitioners (TMPs). Prior Informed Consent was first obtained from the TMPs, namely Bipla Tonchongya, Sadhu Tonchongya, and Pila Tonchongya. The TMPs were explained as to the nature of our visit and consent obtained to disseminate any information obtained both nationally and internationally. Interviews were conducted during 2015 in the Bengali language, which was spoken by both the TMPs 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 [24] and Maundu [25]. In this method, the TMPs took the interviewers on guided field-walks through areas from where they collected their 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

A total of 34 plants distributed into 23 families were used by the healers. The various ailments that they treated included gastrointestinal disorders, helminthiasis, pain, vomiting, cuts and wounds, malaria, urinary problems, rheumatism, respiratory tract disorders, oral lesions, skin diseases, hair loss, physical weakness, anemia, bone fracture, pox, jaundice, burning sensations in the chest and vaginal infections. One plant, namely *Crinum bulbispermum* was used to treat diarrhea in cows. The results are shown in Table 1.

It was noted that for the most part, polyherbal formulations were avoided by the healers. One notable exception was the use of three plants of sudden occurrence of crying during sleep. As treatment, leaves of *Vitex trifolia*, *Alpinia galangal* and *Acorus calamus* were rubbed on a stone and the juice that comes out was advised to be orally taken with water and topically rubbed on the body. It is also to be noted that a number of the plants used by the healers were rubbed on stone to obtain juice. Since the healers had access to better equipments to obtain juice, this must be a tradition which is still followed from ancient times. In some cases, different parts of the same plant was used to treat different diseases like juice from whole plant of *Vernonia patula* was used orally to treat malaria and irregular urination in children, while leaves were used topically to treat rheumatic pain.

A number of plants used by the healers of this Tonchongya community have not been reported before or appears to be novel in their uses. These plants include *Strobilanthes scaber* for treatment of stomach ailments and helminthiasis, *Crinum bulbispermum* for diarrhea in cows, *Merremia emarginata* for coughs and headache, *Peliosanthes teta* for physical weakness and anemia, *Hibiscus rosa sinensis* for blood purification, *Glinus oppositifolius* for bone fracture, *Allophyllus cobbe* as blood purifier, *Cardiospermum halicacabum* for pox, and *Zingiber officinale* for vaginal infections. Thus these plants merit scientific attention for discovery of potentially new drugs. Another plant of interest is *Vernonia patula*, which was used for the treatment of malaria. Interestingly, a related species, *Vernonia amygdalina* has been reported to be useful against malaria [26].

A number of plants used by the TMPs appear to be scientifically validated in their uses based on scientific reports. For instance, whole plants of *Achyranthes aspera* were used by the TMPs to alleviate body pain; methanol extract of leaves of the plant has been shown to possess antinociceptive activity [27]. *Centella asiatica* was used by the TMPs to treat dysentery; the use of this plant for gastrointestinal and other disorders has been reviewed [28]. Ethanolic extract of aerial parts of *Vernonia patula* has been shown to possess anti-inflammatory activity [29]; the TMPs used the plant for alleviating rheumatism. The TMPs used *Mimosa pudica* leaves to treat pain in gums; analgesic and anti-inflammatory activities have been reported with ethanolic extract of the leaves from the plant [30].

Table 1. Medicinal plants and formulations of the Tonchongya healers

Serial Number	Scientific Name	Family Name	Local Name	Parts used	Ailments and mode of medicinal use
1	*Strobilanthes scaber* Nees	Acanthaceae	Chigun hugumya	Leaf	Stomach ailments, helminthiasis. Juice obtained from crushed leaf is taken orally for stomach ailments. Alternately, leaves are boiled in water followed by orally taking the water.
2	*Acorus calamus* L.	Acoraceae	Boith para	Leaf	See *Vitex trifolia*.
3	*Achyranthes aspera* L.	Amaranthaceae	Uba lenga	Whole plant	Body pain, vomiting. Juice from crushed whole plant is orally taken.
4	*Crinum bulbispermum* (Burm. f.) Milne-Redhead & Schweickerdt	Amaryllidaceae	Koba roin	Leaf	Diarrhea in cows. Paste of leaves is fed with water.
5	*Centella asiatica* (L.) Urb.	Apiaceae	Maimuni shak	Whole plant	Dysentery. Raw plant or juice obtained from crushed whole plant is taken orally.
6	*Chromolaena odorata* (L.) R.M. King & H. Rob.	Asteraceae	Demesi gaith	Young aerial part	Bleeding from external cuts and wounds. Juice obtained from crushed young aerial parts is topically applied.
7	*Eupatorium odoratum* L.	Asteraceae	Asha luri	Leaf	Bleeding from external cuts and wounds. Juice obtained from crushed leaves is topically applied.
8	*Vernonia patula* (Dryand.) Merr.	Asteraceae	Moni gua, Bot toah	Whole plant, leaf	Malaria, irregular urination in children. Juice from crushed whole plant is taken orally. Rheumatism. Leaves are warmed over a fire and applied to painful areas.
9	*Bixa orellana* L.	Bixaceae	Bogol gaith	Whole plant	Breast pain in women. Powdered plant is applied topically to breast.
10	*Merremia emarginata* (Burm.f.) Hallier f.	Convolvulaceae	Hoo thoin	Leaf	Coughs, headache. Leaf juice is orally taken.
11	*Kalanchoe pinnata* (Lam.) Pers.	Crassulaceae	Pathorkuchi	Leaf	Coughs. Leaves are boiled in water followed by orally taking the water.
12	*Diplazium esculentum* (Retz.) Sw.	Dryopteridaceae	Dhengi shak	Whole plant	Oral lesions. Paste of whole plant is taken orally.
13	*Mimosa pudica* L.	Fabaceae	Lasua hay	Leaf	Pain in gum. Leaves are boiled in water. The water is kept inside the mouth for some time and then spitted out.
14	*Senna alata* (L.) Roxb.	Fabaceae	Bhoith tolong	Leaf	Skin infection, eczema. Leaf juice is applied topically. Alternately, paste of crushed leaf is applied topically.
15	*Senna occidentalis* (L.) Link	Fabaceae	Kacharang shak	Root	Burning sensations during urination. Roots are rubbed on a piece of stone and then taken orally with water.
16	*Vitex trifolia* L.	Lamiaceae	Soain sine	Leaf	Sudden occurrence of crying during sleep. Leaves of *Vitex trifolia*, *Alpinia galangal* and *Acorus calamus* are rubbed on a stone and the juice that comes out is orally taken with water and topically rubbed on the body.
17	*Litsea monopetala* (Roxb.) Pers.	Lauraceae	Suba gaith	Whole plant	Infection of old wounds. Plant is rubbed on a stone and the paste mixed with water is applied topically.
18	*Aloe indica* Royle	Liliaceae	Albera	Whole plant	Hair loss, loss of skin texture. Paste of whole plant is topically applied to scalp or skin.
19	*Peliosanthes teta* Andrews	Liliaceae	Bindu	Leaf	Physical weakness, anemia. Leaf juice is orally taken.
20	*Grewia paniculata* Roxb.	Malvaceae	Chai pattoa luri	Bottom of stem	Throat pain. Lower portion of stems are rubbed on a stone and the juice that emerges is taken orally.
21	*Hibiscus rosa sinensis* L.	Malvaceae	Rokto joba	Leaf, flower	Blood purifier. Leaf juice is orally taken. Infection of penis. Paste of flower is applied to penis.
22	*Sida rhombifolia* L.	Malvaceae	Sondhya hay	Whole plant	Pain in breast. Paste of whole plant prepared by crushing with a stone is applied topically on the breast.
23	*Tinospora crispa* Miers	Menispermaceae	Gulmoi	Leaf, stem	Formation and enlargement of black spot on the back of newly born baby within hours of birth. Leaf juice is used to wash the child, and leaf and stem juice is orally administered.
24	*Glinus oppositifolius* L.	Molluginaceae	Ghoa duba hay	Whole plant	Bone fracture. The whole plant is uprooted on a Saturday or Tuesday. Several plants are put inside a piece of cloth and three knots are made in one

					breath. The piece of cloth with the plants inside is tied to the fractured area.
25	*Plumbago indica* L.	Plumbaginaceae	Amuni jira	Whole plant	Abortifacient. Paste of whole plant is taken orally.
26	*Aegle marmelos* (L.) Correa	Rutaceae	Bael	Leaf, fruit	Gastrointestinal disorders. Leaves are rubbed on a piece of stone and the emerging juice is taken orally. Jaundice. Fruit pulp is taken with water like a sherbet.
27	*Allophyllus cobbe* (L.) Raeusch.	Sapindaceae	Tin thupya para	Whole plant	Blood purifier. Whole plants are boiled in water and the water is used to take a bath. At the same time, a little amount of the water is taken orally.
28	*Cardiospermum halicacabum* L.	Sapindaceae	Karapoksha shak	Whole plant	Pox. Whole plant is boiled in water followed by taking a bath in the water.
29	*Scoparia dulcis* L.	Scrophulariaceae	Roa para hay	Leaf	Jaundice. Leaves are rubbed on a stone to extract juice, which is taken orally with sugar.
30	*Trema orientalis* (L.) Blume	Ulmaceae	Chig musya	Leaf	Burning sensations in the chest. Juice obtained by rubbing leaves on a stone is taken orally with honey.
31	*Alpinia galangal* Willd.	Zingiberaceae	Khiang shebang	Leaf	See *Vitex trifolia*.
32	*Curcuma longa* L.	Zingiberaceae	Holud	Leaf	Frequent yawning. Dried leaves are rolled and smoked like a cigarette.
33	*Zingiber montanum* (J. Koenig) Link ex A. Dietr.	Zingiberaceae	Kanga	Rhizome	Coughs. Rhizomes are boiled in water with salt followed by orally taking the water.
34	*Zingiber officinale* Roscoe	Zingiberaceae	Palek	Rhizome	Vaginal infections following urination. Rhizomes are taken orally in the raw state with or without salt.

Senna alata, used by the TMPs against skin disorders, has been shown in scientific trials to be effective against skin diseases [31]. Pulp of *Aloe indica* leaves is widely used in the cosmetics industry to smoothen skin; the TMPs used the plant to improve skin texture. *Sida rhombifolia* was used by the TMPs to alleviate pain in breast; analgesic properties of ethanol extract of aerial parts have been reported [32]. *Grewia paniculata* was used by the TMPs to relieve throat pain; the analgesic properties of the plant have been demonstrated [33].

The available scientific literature suggests that the TMPs possessed a good knowledge on the medicinal properties of plants. Indigenous people, through possibly centuries of trial and error have discovered medicinal values of plants, which are only recently being investigated by scientists. Thus the medicinal plants of the Tonchongya TMPs deserve more scientific attention.

CONCLUSION

A number of the plants used by the Tonchongya tribal healers, especially plants used to treat diseases like malaria, oral lesions, loss of skin texture, and bone fracture deserve scientific attention towards discovery of possible novel and more efficacious drugs.

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REFERENCES

[1] MS Hossan; P Roy; S Seraj; SM Mou; MN Monalisa; S Jahan; T Khan; A Swarna; R Jahan; M Rahmatullah, *Am.-Eur. J. Sustain. Agric*., **2012**, 6(4), 349-359.
[2] A Wahab; S Roy; A Habib; MRA Bhuiyan; P Roy; MGS Khan; AK Azad; M Rahmatullah, *Am.-Eur. J. Sustain Agric*, **2013**, 7(3), 227-234.
[3] A Islam; AB Siddik; U Hanee; A Guha; F Zaman; U Mokarroma; H Zahan; S Jabber; S Naurin; H Kabir; S Jahan; M Rahmatullah, *J. Chem. Pharmaceut. Res*., **2015**, 7(2), 367-371.
[4] RT Esha; MR Chowdhury; S Adhikary; KMA Haque; M Acharjee; M Nurunnabi; Z Khatun; Y.-K Lee; M Rahmatullah, *Am.-Eur. J. Sustain. Agric*., **2012**, 6(2), 74-84.
[5] M Rahmatullah; AR Chowdhury; RT Esha; MR CHowdhury; S Adhikary; KMA Haque; A Paul; M Akber, *Am.-Eur. J. Sustain. Agric*., **2012**, 6(2), 107-112.
[6] A Biswas; WM Haq; M Akber; D Ferdausi; S Seraj; FI Jahan; AR Chowdhury; M Rahmatullah, *Am.-Eur. J. Sustain. Agric*., **2011**, 5(1), 15-22.

[7] KR Biswas; T Ishika; M Rahman; A Swarna; T Khan; MN Monalisa; M Rahmatullah, *Am.-Eur. J. Sustain. Agric*., **2011**, 5(2), 158-167.
[8] N Islam; R Afroz; AFMN Sadat; S Seraj; FI Jahan; F Islam; AR Chowdhury; MS Aziz; KR Biswas; R Jahan; M Rahmatullah, *Am.-Eur. J. Sustain Agric*., **2011**, 5(2), 219-225.
[9] M Rahmatullah; MNK Azam; MM Rahman; S Seraj; MJ Mahal; SM Mou; D Nasrin; Z Khatun; F Islam; MH Chowdhury, *Am.-Eur. J Sustain Agric*., **2011**, 5(3), 350-357.
[10] M Rahmatullah; KR Biswas, *J. Altern. Complement Med*., **2012**, 18(1): 10-19.
[11] M Rahmatullah; A Hasan; W Parvin; M Moniruzzaman; Z Khatun; FI Jahan; R Jahan, *Afr. J. Tradit. Complement. Alternat. Med*., **2012**, 9(3), 350-359.
[12] M Rahmatullah; Z Khatun; A Hasan; W Parvin; M Moniruzzaman; A Khatun; MJ Mahal; MSA Bhuiyan; SM Mou; R Jahan, *Afr. J. Tradit. Complement. Alternat Med*., **2012**, 9(3), 366-373.
[13] M Rahmatullah; MNK Azam; Z Khatun; S Seraj; F Islam; MA Rahman; S Jahan; MS Aziz; R Jahan, *Afr. J. Tradit. Complement. Alternat Med*., **2012**, 9(3), 380-385.
[14] M Rahmatullah; Z Khatun; D Barua; MU Alam; S Jahan; R Jahan, *J. Altern. Complement. Med*., **2013**, 19(6), 483-491.
[15] M Rahmatullah; SR Pk; M Al-Imran; R Jahan, *J. Altern. Complement. Med*., **2013**, 19(7), 599-606.
[16] A Khatun; MAA Khan; MA Rahman; MS Akter; A Hasan; W Parvin; RJ Ripa; M Moniruzzaman; MJ Mahal; M Rahmatullah, *Am.-Eur. J Sustain. Agric.*, **2013**, 7(5), 319-339.
[17] MN Nahar; J Ferdous; FZ Samanta; KA Shuly; S Nahar; R Saha; S Islam; MJ Mahal; S Seraj; M Rahmatullah, *Am.-Eur. J. Sustain. Agric*., **2013**, 7(5), 403-414.
[18] SA Hasan; MM Uddin; KN Huda; A Das; N Tabassum; MR Hossain; MJ Mahal; M Rahmatullah, *Am.-Eur. J. Sustain. Agric*., **2014**, 8(1), 10-19.
[19] I Malek; N Mia; ME Mustary; MJ Hossain; SM Sathi; MJ Parvez; M Ahmed; S Chakma; S Islam; MM Billah; M Rahmatullah, *Am.-Eur. J. Sustain. Agric*., **2014**, 8(5), 59-68.
[20] JK Nandi; MF Molla; MK Mishu; M Hossain; MS Razia; SI Doza; KMH Rahman; CS Sarker; M Rahmatullah, *J. Chem. Pharmaceut. Res*., **2015**, 7(2), 722-726.
[21] T Rahman; M Marzia; M Noshine; S Afrin; SA Sheela; F Sultana; TI Mouri; MT Islam; PR Das; MS Hossan; M Rahmatullah, *World J. Pharm. Pharmaceut Sci*., **2015**, 4(3), 101-111.
[22] A Islam; AB Siddik; U Hanee; A Guha; F Zaman; U Mokarroma; H Zahan; S Jabber; S Naurin; H Kabir; S Jahan; M Rahmatullah, *World J. Pharm. Pharmaceut. Sci*., **2015**, 4(3), 180-188.
[23] A Islam; AB Siddik; U Hanee; A Guha; F Zaman; U Mokarroma; H Zahan; S Jabber; S Naurin; H Kabir; S Jahan; M Rahmatullah, *World J. Pharm. Pharmaceut. Sci*., **2015**, 4(3), 189-196.
[24] GJ Martin, Ethnobotany: a 'People and Plants' Conservation Manual, Chapman and Hall, London, **1995**, pp268.
[25] P Maundu, *Indigenous Knowledge and Development Monitor*, **1995**, 3(2), 3-5.
[26] NJ Toyang; R Verpoorte, *J. Ethnopharmacol*., **2013**, 146(3), 681-723.
[27] CC Barua; A Talukdar; SA Begum; LC Lahon; DK Sarma; DC Pathak; P Borah, *Indian J. Exp. Biol*., **2010**, 48, 817-821.
[28] SS Jamil; Q Nizami; M Salam, *Nat. Prod. Radiance*, **2007**, 6(2), 158-170.
[29] A Hira; SK Dey; MSI Howlader; A Ahmed; H Hossain; IA Jahan, *Asian Pac. J. Trop. Biomed*., **2013**, 3(10), 798-805.
[30] PK Vikram; R Malvi; DK Jain, *Int. J. Curr. Pharmaceut. Res*., **2012**, 4(4), 47-50.
[31] TV Benjamin; A Lamikanra, *Pharmaceut. Biol*., **1981**, 19(2-3), 93-96.
[32] MA Rahman; LC Paul; M Solaiman; AA Rahman, *Pharmacologyonline*, **2011**, 2, 707-714.
[33] MS Ali; M Nasrin; PR Dash, *American J. Food Nutr*., **2015**, 3(1), 21-27.