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ETHNO-MEDICO BOTANICAL STUDY AMONG THE FOUR INDIGENOUS COMMUNITIES OF BANDARBAN, BANGLADESH

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Abstract

This paper provides ethno-botanical information on 70 plant species under 36 families and these species were in common use among the Bwam, the Marma, the Murang and the Tanchangya communities of Bandarban hill district. Ethno-medicinal uses along with their scientific names, families, local names, voucher numbers and uses are enumerated. Quantitative analysis shows that the Marma tribe uses the higher number of species followed by the Tanchangya, the Murang and the Bwam. Similarity index indicates that the Marma, the Tanchangya and the Murang have higher similarities for ethno-botanical knowledge among four tribes. The most widely used medicinal plants are *Cassia obtusifolia* L., *Centella asiatica* (L) Urban., *Costus speciosus* Smith, *Emilia sonchifolia* DC., *Litsea glutinosa* (Lour.) Roxb., *Melothria indica* Lour. and *Premna esculenta* Roxb. Fever, cough, menstrual problem, diarrhoea, dysentery, tumor and skin diseases seem to be common problems treated using plants by the tribal communities in Bandarban district.

Introduction

Bandarban hill district is the second largest district of Chittagong Hill Tracts (CHT) with an area of 4,502 sq. km. It is situated in the southeast of Bangladesh and located between 21º25/ and 23º45/ N and between 91º45/ and 92º50/ E (Alam and Mohiuddin, 2008). Geographically it is a part of the Hindu-Kush-Himalayan region of the continent (Khan *et al*., 2007). Landform of Bandarban is mainly composed of high hills (20%), medium hills (22%), low hills (31%) and the rest is valley land. Eleven tribes (ethnic groups) are living in different hilly areas of Bandarban district (Banglapedia, 2006). The Bwam, the Marma, the Murang, and the Tanchangya are the dominant tribes and constitute 70% hill population of this district (Khan *et al.*, 2007). They have their own culture, tradition and primary health care system acquired through close observation of nature. These tribal people has a close relation with surrounding flora and using different plant parts as food, medicine, dye, soap and other purposes from the time immemorial in their day to day life.

Bandarban district is rich in floristic composition of medicinal plants, and the tribal herbal healers locally called "Bhaidya" use these plants in preparing traditional medicine. Ethno-medicinal knowledge plays an important role in identifying plants of therapeutic agents (Balick, 1990). Ethno-botanical samples contain novel drug compounds and helps to find out economically important plant based drugs (Cox and Balick, 1994). Like the other parts of the world, a good number of the people of Bandarban hill district still depend upon the herbal healers and herbal medicine for treatments.

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Several ethno-medicinal studies in Bangladesh have been carried out by Alam (1992), Hassan and Khan (1996), Rahman *et al.* (1998), Rahman and Uddin (1998), Rahman (2003), Rahman *et al*. (2003), Uddin *et al.* (2004) and Yusuf *et al.* (2006, 2007). However, there is very limited information on the ethno-medicinal plants used by the tribal communities of Bandarban hill district. This study aims to document ethno-medicinal plants used for the treatment of different diseases by four tribes of Bandarban district namely the Bwam, the Marma, the Murang, and the Tanchangya communities to make a quantitative analysis of botanical knowledge of these tribes.

Materials and Methods

A series of exploration in the tribal areas of Bandarban district have been conducted for a period of four years through 2003 to2007. During the study we visited different tribal *paras* (villages) of three Upazillas namely Bandarban Sadar, Lama and Rwangcharai during different seasons for collecting the ethnomedicinal plants. The Marma and the Tanchangya tribes have herbal healers, locally called 'Bhaidya'. The other two tribes (the Bwam and the Murang) generally do not have herbal healers. For the study we collected plant specimens in different seasons along with necessary information with the help of herbal healers from the surrounding forests areas. Collated information was cross checked in the field to validate the gathered information. Collected samples were processed and authentically identified consulting the pertinent literatures, *viz*. Hooker (1872-1897), Prain (1903), Brandis (1906) and Kanjilal *et al*. (1934, 1938, 1939, 1940). The voucher specimens are housed in Bangladesh Forest Research Institute Herbarium, Chittagong. In this paper the common species between and among the four tribes have been enumerated. Local names are given in italics followed by the tribal name in parenthesis in abbreviated form (B for Bwam, M for Marma, Mu for Murang and T for Tanchangya). Prior consent of the knowledge providers were taken for documentation and further sharing.

Results and Discussion

The plants used by four tribes in Bandarban district are summarized in Table 1. A comparative analysis of the number of ethno-medicinal plants used by the four tribes showed that the Marma tribe uses the highest number of species (48 species), followed by the Tanchangya (43 species), the Murang (34 species) and lowest by the Bwam (6 species). *Costus speciosus*, *Emila sonchifolia* and *Prema esculenta* were common among the four tribes. *Alpinia nigra, Cassia obtusifolia, Centella asiatica, Emblica officinalis, Melthoria indica, Sarcochlamys pulcherrima, Solanum torvum* and *Spilanthes calva* were common species among the Marma, the Murang and the Tanchangya. Similarity index showed that 29 species were common between Tanchangya and Marma, 25 species were common between Murang and Marma, 9 species were common between Tanchangya and Murang (Table 2). Six species were common for Bwam and Marma. Five species were common for Bwam and Murang. Three species were common for Tanchangya and Bwam. The present findings indicated that the plant use pattern by different tribes is different, and number of common species used by different tribes is very limited. Use of more plants by the Marma tribe for different purposes indicates that they have more knowledge-base about the plant use than other three tribes.

Table 1. Enumeration of the ethno-medicinal species used by the Marma, the Tanchangya, the Murang and the Bwam tribes of Bandarban district.

Scientific name	Family	Local name	Voucher numbers	Parts used	Mode of use	Uses
1. *Abelmoschus moschatus* (L.) Medik	Malvaceae	*Follow Ma*; *Fluma Wai* (M), *Purnima gaith* (T)	9613, 8883, 8921	Seeds	Paste as poultice	Breathing problem, cough and asthma of children
2. *Albizia procera* (Roxb.) Benth.	Mimosaceae	*Sil Koroi Gaith* (T)	9123	Bark	Bark-boiled water	Scabies
3. *Allophyllus cobbe* L.	Sapindaceae	*Si Sa Calaai* (M), *Kro Kaya Dung* (Mu)	9289, 9699	Whole plants, leaves	Decoction and paste	Headache, weakness, put on boils to release the pus
4. *Alpinia nigra* (Geartn.) Burtt.	Zingiberaceae	*Padah Grah* (M), *Tara* (T), *Kom Hing* (Mu)	8436, 8373	Rhizome	Lotion poured in eye three times	Eye lotion in unconsciousness due to high fever
5. *Alstonia scholaris* R. Br.	Apocynaceae	*Chai Lang* (M), *Chen Chana Gaith* (T)	8916, 9137	Seedlings	Paste as ointment, juice	Rheumatic arthritis, allergy
6. *Ampelygonum salarkhanii* Hassan	Polygonaceae	*Young Krong Oam* (Mu)	9214, 10240	Leaves	Decoction taken three times	Vocal problem
7. *Argyreia argentea* Choisy	Convolvulaceae	*Bang Beo* (Mu)	9600	Leaves	Paste as poultice	Snakebite
8. *Azadirachta indica* A. Juss.	Meliaceae	*Nim Gaith* (T)	9018	Leaves	Juice and decoction	Stomachache, fever and allergy
9. *Blumea lacera* (Burm.f) DC.	Asteraceae	*Fao Ma* (M), *Amai Sak* (T)	8737, 8791, 9105, 9676	Leaves, roots	Leaf and root juice	Stomach pain, dyspepsia and nose bleeding, male stimulant
10. *Bombax ceiba* L.	Malvaceae	*Lakh Pine* (M), *Chamful Gaith* (T)	8740	Sapling roots	Eaten raw	Male stimulant, sacred tree in the village
11. *Bridelia retusa* (L.) Spreng.	Euphorbiaceae	*Fai-mong* (M), *Konku* (T)	8427, 8428	Leaves	Paste as poultice	Rheumatism, boil
12. *Buettneria pilosa* Roxb.	Sterculiaceae	*Salam Vra* (M), *Chaala ludhi* (T)	8466, 9017	Whole plants, leaves	Paste and juice	Antidandruff shampoo, eye disease
13. *Cassia fistula* L.	Caesalpiniaceae	*Honalu* (T)	9170	Fruits	Eaten raw	Laxative
14. *Cassia obtusifolia* L.	Caesalpiniaceae	*Dang Geya* (M), *Robay* (Mu), *Echir Gaith* (T)	8601, 8672, 8794, 9255, 9293, 8730	Whole plants, roots, leaves, fruits	Paste as poultice, juice decoction	Fever, cough and fever, pain, vocal problem and anthelmintic
15. *Centella asiatica* (L.) Urban	Apiaceae	*Marang Khoa* (M), *Maimuni Sak* (T), *Ting Thai* (Mu)	8610, 9204, 9219, 8432	Leaves, whole plants,	Juice, tablet and paste	Diarrhoea, menstrual problem, stomach pain, stimulant

Table 1. Contd.

Scientific name	Family	Local name	Voucher numbers	Parts used	Mode of use	Uses
16. *Clerodendrum nutans* Wallich	Verbenaceae	*Tarana Topa* (Mu)	9093	Root	Juice	Tumor
17. *Costus speciosus* Smith	Zingiberaceae	*Prayan chondu*, *Khayathu Moi* (M), *Pino Tiyen Tone* (B), *Kagori Gaith* (T), *Oal Sup* (Mu)	8642, 8690, 8940, 9208, 9228	Rhizome	Juice, poultice	Diabetes and high fever
18. *Crotolaria pallida* Ait.	Fabaceae	*Tha Sin Nora Si* (M), *Roa Bay* (Mu)	8971, 9141, 9149, 9255	Roots, leaves, whole plants	Leaf juice taken two times daily for seven times, decoction	Menstrual and urinary problems of female, and vocal problem
19. *Dioscorea bulbifera* L.	Dioscoreaceae	*Chang Foya, Ta Su Dhui* (M)	8632, 9643	Tubers, leaves	Paste as poultice	Bone fracture, boils
20. *Diplazium esculentum* (Retz.)Sw.	Athyriaceae	*Gain Dhagah* (M), *Dengi Sak* (T)	8969, 8708, 9201	Whole plant, leaves,	Decoction, juice	Toothache, headache, reduce affect of allopathic medicines
21. *Dryopteris oreopteris* (Ehrn.) Maxon.	Polypodiaceae	*Graing Ga dha*, *Gri Ga Dak* (M), *Keng Khah* (Mu)	8431, 9142	Roots	Hot foment	Wound pain of hand and leg
22. *Elephantopus scaber* L.	Asteraceae	*Pru Suang* (M), *Mi* (Mu)	8752, 9253	Whole plants	paste as poultice	Boils and boil pain, enhance lactation during post-natal time.
23. *Emblica officinalis* Geartn. f.	Euphorbiaceae	*Soi sha* (M), *Sowan Lu* (B), *Khulu* (Mu)	8761	Fruits	Eaten raw, decoction	Stomach pain, jaundice, male impotency
24. *Emilia sonchifolia* DC.	Asteraceae	*Plowi Pang* (Mu), *Bel Naw Nuh* (B), *Fao Ma* (M), *Dandha Upon* (T)	8659, 9206, 9221, 9263	Whole plants, Root	External use, decoction	Stomach tumor
25. *Eupatorium odoratum* L.	Asteraceae	*Oyala*, *Moonjava*, *Ohipanea* (M), *Yi La* (Mu)	8188; 8602; 8678, 8739	Leaves, whole plants, roots	Decoction, paste as poultice, juice	Cut bleeding, rheumatism, stimulant, tonsillitis, headache
26. *Ficus altissima* Bl.	Moraceae	*Bot Gaith* (T)	10632	Leaves, roots, branches	Paste	Boils
27. *Ficus benghalensis* L.	Moraceae	*Bot Gaith* (T)	10292	Stem bark	Paste	Diabetes
28. *Ficus semicordata* Buch.-Ham.ex Sm.	Moraceae	*Chorki Gula* (T)	11071	Fruits	Cooked in curries	Cooked in curries and taken for diabetes

(Contd.)

Table 1. Contd.

Scientific name	Family	Local name	Voucher numbers	Parts used	Mode of use	Uses
29. *Flemingia bracteata* DC. *ex* Kurz	Fabaceae	*Tha Mang Chau* (M), *Yiam Na* (Mu)	8748, 8882	Roots, Leaves	Juice , decoction for bath	Hysteria, jaundice
30. *Glochidion multiloculare* Muell Arg.	Euphorbiaceae	*Kack Khang* (T)	9039	Leaves, twigs, fruits	Juice as lotion, decoction for bath	Allergy, fruits as food
31. *Gmelima arborea* (Roxb.) DC.	Verbenaceae	*Gamari Gaith* (T)	10293	Bark, fruits	Juice as lotion	Stomachache, toe infection
32. *Hibiscus surattensis* L.	Malvaceae	*Sowa Amela* (T)	11081	Leaves	Decoction as lotion	Leg sore during rainy season
33. *Holarrhena antidysenterica* Wall.	Apocynaceae	*Luk Tuk* (M), *Puron Cha* (T)	8622, 9021	Root	Juice taken orally	Dysentery, diarrhoea.
34. *Homalomena aromatica* Schott	Araceae	*La Bang* (Mu)	8957	Twigs, stems	Juice	Rheumatism
35. *Hymenodictyon orixensis* (Roxb.) Mab.	Rubiaceae	*Kho Jai*, *Khujeba* (M), *Puron Cha* (T)	8199, 8621	Leaves	Juice as lotion	Menstruation problem, delivery bleeding, ear infection
36. *Hyptis suaveolens* Poit.	Lamiaceae	*Thukma* (T), *Chang Kasey* (M)	9232	Seeds, leaves	Soaking in water, paste as poultice	Drink, intoxication
37. *Ichnocarpus frutescens* (L.) R. Br.	Apocynaceae	*Bhutta ludi* (T)	9233	Twigs	Sap extract	Eye diseases
38. *Jasminum scandens* Vahl	Oleaceae	*Kao Rong* (Mu)	9097	Root	Paste as poultices	Boils
39. *Leucas lavandulifolia* Sm.	Lamiaceae	Sasaneo (B), *Pai Sung Sa*, *Pai Tung Sa* (M)	8490, 8673, 8975	Leaves, root	Juice is taken	Insomnia, cough and asthma
40. *Litsea glutinosa* (Lour.) Roxb.	Lauraceae	*Klang Nup* (Mu), *Bini Gaith* (T)	8934	Bark, leaves	Paste as poultice, decoction is taken	Boils, skin disease, body pain, diarrhoea and dysentery
41. *Luffa graveolens* Roxb.	Cucurbitaceae	*Ting Tua* (Mu)	9250	Fruits	Paste	Antidandruff shampoo
42. *Mangifera indica* L.	Anacardiaceae	*Amm Gaith* (T), *Sarock Apaong* (M)	10294	Bark, leaves	Paste and decoction	Diarrhoea, dropsy, enhance fertility

(Contd.)

Table 1 Contd.

Scientific name	Family	Local name	Voucher numbers	Parts used	Mode of use	Uses
43. *Melothria indica* Lour.	Curcubitaceae	*Kabu Noyea* (M), *Ann Joy Jika* (B), *Lui Hui Oam* (Mu)	8689, 8956, 9226	Root	Paste as poultices	Enlarged testis
44. *Microcos paniculata* L.	Tiliaceae	*Tarani* (M), *Yoria Sock* (Mu)	8453	Bark	Decoction as lotion and bath	Skin disease
45. *Mimosa pudica* L.	Mimosaceae	*Kak Pine* (M), *Lasjuk Gaith* (T)	8600, 8676	Root	Powder, paste	Piles, cut wound, large boils
46. *Mitragyna parviflora* (Roxb.) Korth	Rubiaceae	*Pannka Gaith* (T), *Punka* (M)	9663	Root, leaves	Juice and paste as poultice	Carbuncle, boils
47. *Moringa oleifera* Lamk.	Moringaceae	*Sajena Gaith* (T), *Dain Tho Rai* (M)	8687	Seed	Paste a poultice	Boils
48. *Mussaenda macrophylla* Wall.	Rubiaceae	*Mas Masha*, *Tah Paseh*, *Toi Say Noi Rachi*, *Krama Puma* (M); *Rani Thak* (T)	8619, 8423, 9028, 8187, 9276, 9629	Whole plants, root, leaves	Decoction , juice, powder	Jaundice, regulate menstruation cycle, headache, and leucorrhoea, breathing problem, chicken pox
49. *Ocimum grastissimum* L.	Lamiaceae	*Sang Haphoi* (M), *Midar Roshi Gaith* (T)	8447, 9632	Whole plants, leaves	Decoction is taken and as bath water	Allergy, cough of children
50. *Ocimum sanctum* L.	Lamiaceae	*Nung Gri*, *Mro Ma Nung Paing* (M), *Ramal* (T)	9157, 9627, 11082	Leaves	Juice is taken	Fear, fever, malaria
51. *Oroxylum indicum* Vent.	Bignoniaceae	*Kraat Sabaa, Cron Sha Pang* (M), *Long Kock Sim* (Mu)	8697, 9225	Young fruits, leaves	Paste as poultices, decoction as bath water	Knee joint pain and malaria, liver diseases, jaundice
52. *Oxalis corniculata* L.	Oxalidaceae	*Pa Su* (M), *Sap Ann Khur* (B)	8608, 8944	Leaves	Juice is taken	Menstrual problem.
53. *Passiflora foetida* L.	Passifloraceae	*Aanu Akma* (M), *Mathri Gula* (T)	8671, 9630	Whole plant		Skin disease
54. *Phyllanthus niruri* L.	Euphorbiaceae	*Grukhri* (M), *Kura Amluki* (T)	8670, 11076	Whole plants, leaves	Decoction as lotion, juice is taken	Skin care, dehydration.
55. *Premna esculenta* Roxb.	Verbenaceae	*Kra Murock*, *Tah Kram Rock* (M), *Un Adehye Nah* (B), *Kasobu* (Mu), *Larong Pata Sag* (T)	8618, 8942, 8650, 8952, 9138, 9211	Whole plants leaves, roots,	Smoke inhaled, juice taken	Headache, cough (tuberculosis), fever, pneumonia
56. *Psychotria calocarpa*	Rubiaceae	*Ram Praow* (Mu)	9095	Root	Paste as poultice	Boils

Table 1. Contd.

Scientific name	Family	Local name	Voucher numbers	Parts used	Mode of use	Uses
57. *Rauwolfia serpentina* (L.) Benth. *ex* Kurz	Apocynaceae	*Rowmba Raja* (T)	8995	Root	Decoction is taken	Stomach pain and tumor
58. *Sarcochlamys pulcherrima* Gaud.	Urticaceae	*Ma Cha Da* (M), *Kan Leng* (Mu), *Jung Gallya Sak* (T)	8186, 8489, 8657, 9207, 9227, 9681	Whole plants, leaves, fruits	Juice as lotion, power smell is inhaled	Boils, cold, lactation
59. *Solanum torvum* Swartz	Solanaceae	*Kajah Gri*, *Fok Khadsu* (M), *Titar Berul* (T), *Kur Ka Plawo* (Mu)	8438, 8629, 8662, 8741, 8990, 9126	Root, twigs	Juice is taken	Menstruation problems, diabetes
60. *Spilanthes calva* DC.	Asteraceae	*Hang Fui*, *Sa Ma Hang Pui* (M), *Kun Dung* (Mu), *Jaba Achinsag* (T)	8445, 9216	Leaves	Juice is taken, paste as poultice	Earache due to insect attack, stop bleeding from the cut wound
61. *Sterculia villosa* Roxb.	Sterculiaceae	*Fi Wo Ba* (M), *Ya Sing*, *Tia Sing* (Mu)	8703, 8823	Young leaves, twigs, barks	Water extract after 10-12 hours soaking	Urinary problem
62. *Tabernaemontana recurva* Roxb.	Apocynaceae	*Uthar Thong* (Mu)	9099	Root	Root juice	Blood diseases
63. *Tamarindus indica* L.	Caesalpiniaceae	*Hao Mong Gayoi Si* (M), *Teroi Gaith* (T)	9005	Leaves, fruits	Eaten raw, used in curry	Appetizer, weakness
64. *Terminalia bellirica* Roxb.	Combretaceae	*Boya Gula* (T), *Ka Sing Ba, Soi Sing Si* (M)	9675	Fruits, seeds	Eaten raw, tablet	Diarrhoea, appetizer, male stimulant
65. *Uraria crinita* (L.) Desv. *ex* DC.	Fabaceae	*Belai Labu* (T)	11072	Whole plant paste	Pill	Fever
66. *Urena lobata* L.	Malvaceae	*Fao Pi*, *Aafock Ma*, *Faw Ma* (M), *Napsa* (Mu)	8746, 8609, 8799, 11062	Root, leaves	Juice, paste as poultice	Birth control, easy delivery, mouth sore, stomach pain
67. *Vernonia patula* (Dryand.) Merr.	Asteraceae	*Hung Fui* (M), *Loo Hu* (Mu)	8400, 10232	Bark	Paste	Skin disease
68. *Vitex negundo* L.	Verbenaceae	*Soyin Ma Pata* (T)	9628	Leaves	Decoction as lotion	Hysteria
69. *Vitis repens* W. & A.	Vitaceae	*Rimi Owa Rih*, *Owa Rong Sai* (M), *Pra Ma* (Mu)	8422, 8637, 8954, 9222, 9607, 9297	Whole plant, leaves	Decoction as bath water	Jaundice
70. *Woodfordia fruticosa* (L.) Kurz	Lythraceae	*Se-Be-Gra* (M), *Mricha* (Mu)	9158, 10239	Flowers, root	Pill, root juice	High fever, diarrhoea, dysentery

Table 2. Similarity index of common medicinal plant species among the four tribes in Bandarban.

Tribes	Marma	Tanchangya	Murang	Bwam
Marma	0			
Tanchangya	29	0		
Murang	25	9	0	
Bwam	6	3	5	0

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References

Alam, M.K. 1992. Medicinal ethnobotany of the Marma tribe of Bangladesh. Economic Botany **46**(3): 330-335.

Alam, M.K. and Mohiuddin, M. 2008. Shifting cultivation (Jhum) agrobiodiversity at stake: Bangladesh Situation. Acta Hort. **806**(2): 709-715.

Balick, J.M. 1990. Ethnobotany and identification of therapeutic agents from the rainforest. *In*: Chadwick, D.J. and Marsh J. (eds), Ethnobotany and the Search for New Drugs (Ciba Foundation Symposium 185). Wiley, Chi Chester, pp. 22-32.

Banglapedia 2006. Bandarban district. Asiatic Society of Bangladesh, Dhaka. Website: <www.banglapedia. org/httpdocs/HT/B - 0101 HTM>.

Brandis, D. 1906 (Reprint 1978). Indian Trees. Periodical Expert Book Agency, Delhi, India, 677 pp.

Cox, P.A. and Balick, M.J. 1994. The ethnobotanical approach to drug discovery. Sci. Amer. **270**(6): 60-65.

Hassan, M.A. and Khan, M.S. 1996. Ethnobotanical records in Bangladesh -2. Plants used for healing cuts and wounds. Bangladesh J. Plant Taxon. **3**(2): 49-52.

Hooker, J.D. 1872-1897. Flora of British India, Vols. **1-7**. Reeve & Co., Kent, England.

Kanjilal, U.N., Kanjilal, P.C. and Das, A. 1934. (Reprint1984). Flora of Assam. **1**: 1-386. Periodical Expert Book Agency, Delhi.

Kanjilal, U.N., Kanjilal, P.C. and Das, A. 1938. (Reprinted 1984). Flora of Assam. **2**:1-409 Periodical Expert Book Agency, Delhi.

Kanjilal, U.N., Das, A. Kanjilal, P.C. and De, R.N. 1939. (Reprint 1982). Flora of Assam. **3**: 1-578. A Von Book Co., Delhi.

Kanjilal, U.N., Das, A. Kanjilal, P.C. and De, R.N. 1940. (Reprint1984). Flora of Assam. Vol. **4**: 1-377. A Von Book Co., Delhi.

Khan, M.F.A., Mantel, S. and Chowdhury, E.H. 2007. State of the Environment of the Chittagong Hill Tracts. Charm Project Report 2. (Pro.no. BD/Asia-pro Eco/12/103-584).

Prain, D. 1903. (Indian Reprint 1981). Bengal Plants. **1&2**: 1-1319. Bishen Singh Mahendra Pal Singh, Dehra Dun, India.

Rahman M.A. 2003. Ethno-medico-botanical knowledge among tribals of Bangladesh. In: Ethnobotany and Medicinal Plants of Indian Subcontinent. Scientific Publisher, Jodhpur, India, pp. 89-93.

Rahman, M.A. and Uddin, S.B. 1998. Some anti-rheumatic plants used by tribal people of Hill Tracts districts of Bangladesh. Biodiversity Newsletter **2**(2): 4.

Rahman, M.A., Uddin, S.B. and Khisa, A. 1998. A report on some anti–Jaundice plants from tribal community of Hill districts. Biodiversity Newsletter **2**(1): 4.

Rahman, M.A., Uddin, S.B. and Wilcock, C.C. 2003. Indigenous knowledge of herbal medicine in Bangladesh: Diarrhoea, dysentery, indigestion and stomach pains. J. Med. & Aro. Pl. Sc. **25**: 101-109.

Uddin, S.N., Uddin, M.Z., Hassan, M.A. and Rahman, M.M. 2004. Preliminary ethnobotanical plant survey in Khagrachari district, Bangladesh. Bangladesh J. Plant Taxon. **11**(2): 39-48.

Yusuf, M., Wahab, M.A. and Chowdhury J.U. 2006. Ethno-medico-botanical knowledge from Kauhkali Proper and Betbunia of Rangamati District. Bangladesh J. Plant Taxon. **13**(1):55-61.

Yusuf, M., Wahab, M.A., Yousuf, M., Chowdhury, J.U. and Begum, J. 2007. Some tribal medicinal plants of Chittagong Hill Tracts, Bangladesh. Bangladesh J. Plant Taxon. **14**(2): 117-128.

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