



Ethnobotanical Study of Traditional Medicinal Plants Used by the Santal Tribal Practitioners at the Village Jamtala of Chapai Nawabganj District, Bangladesh

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Abstract

Ethnobotanical study of traditional medicinal plants used by the Santal tribal practitioners at the village Jamtala of Chapai Nawabganj district, Bangladesh was recorded. Frequent field trips were made during December 2013 to June 2015 to record ethno-medicinal data by interviewing Santal tribal practitioners of various age groups, mostly ranging between 22 to 84 years, including medicinal healers (herbalists/hakims). A total of 146 plant species under 126 genera of 64 families have been documented which are used for the treatment of 102 categories ailments/diseases. Out of these plants species, 59 belonged to herbs, 45 trees, 24 shrubs, and 18 climbers. In majority cases, leaves of the medicinal plants were found leading in terms of their use followed by 29.80% fruits, 36.42% roots, 19.20% bark, 24.50% whole plant, 9.93% stem, 2.65% latex, 1.32% bulb, 10.60% rhizomes, 9.27% seed, 4.63% gum, 1.32 % leaf stalks, 1.32% petiole, 9.93% flower, 2.65% juice, 1.99% cotton, 0.67% pericarp, 2.65% young buds, 0.67% pods, 1.32% grain, 0.67% central tender part. For each species scientific name, local name, habit, family, ailments to be treated, mode of treatment and part(s) used are documented. Collected information depicts that Santal tribes largely depend on medicinal plants to meet their primary health care needs.

Keywords: Ethno-botany; Medicinal Plants; Santals; Chapai Nawabganj; Bangladesh.

1. Introduction

The use of plants as a healing agent has been passed from generation to generation throughout tribal cultures of the world. The oldest records of use of medicinal plants can be traced as far back as 2,000 B.C in the ancient Indian medical system known as Ayurveda and Siddha medicine as well as ancient Egyptians. Advancement in ethnomedicine was limited because of the difficulty in communication between greatly distanced tribes and human civilizations. Ethnomedicine is known today as the traditional medicine practiced by various ethnic groups and by the indigenous peoples of the world. These medicinal traditions are only passed down orally from generation to generation and are very rarely documented (Arzu and Thiagarajan, 2016). The World Health Organization, it is estimated that 80 percent of the population of developing countries relies on traditional plant based medicines for their health requirements (WHO, 1999).

Studies on ethno-medicinal information of ethnic communities in Bangladesh are at initial stage. Several ethno-medicinal studies in Bangladesh have been carried out by Alam 1992; Alam et al., 1996; Anisuzzaman et al., 2007; Choudhury and Rahmatullah 2012; Faruque and Uddin 2014; Isrer et al., 2015; Khan 1998; Khisha 1996; Malek et al., 2014a, 2014b; Moonmoon et al., 2014; Nilima et al., 2015; Rahman et al., 2013a, 2013b, 2013c, 2013d; Rahman et al.,

2014a, 2014b, 2014c; Rahman and Akter 2013; Rahman et al., 2015a, 2015b, 2015c; Rahman et al., 2008a, 2008b; Rahman and Debnath 2015; Rahman et al., 2010, 2012; Rahman and Gulshana 2014; Rahman and Jamila 2015; Rahman and Keya 2015; Rahman and Khanom 2013; Rahman and Parvin 2014; Rahman and Rahman 2014; Rahman and Rojonigondha 2014; Rahman 2014a, 2014b; Rahman 2013a, 2013b, 2013c, 2013d, 2013e, 2013f, 2013g, 2013h, 2013i, 2013j, 2013k, 2013l; Sadika et al., 2015 and Uddin et al., 2008, 2014. The present study was to first record of medicinal plants used by the Santal tribes living in Jamtala village of Chapai Nawabganj district, Bangladesh.

2. Materials and Methods

Study Area: Jamtala is a village under Nawabganj Sadar upazila of Chapai Nawabganj in the Division of Rajshahi Bangladesh. Nawabganj upazila area is 451.78 km² located in between 24°36'N 88°16'E Coordinates: 24°36'N 88°16'E. It is bounded by Gomastapur upazila on the north, on the north-east nachole, on the west shibganj and on the south-east Rajshahi Zila. The climate of this village is generally tropical wet and dry climate, characterized by high temperatures, heavy monsoon, moderate rainfall and high humidity. The hot season commences early in March and continues till the middle of July. The maximum mean temperature observed is about 32 to 36 °C (90 to 97 °F) during the months of April, May, June and July and the minimum temperature recorded in January is about 7 to 16 °C (45 to 61 °F). The highest rainfall is observed during the months of monsoon. The annual rainfall in the district is about 1,448 millimetres (57.0 in). This seasonal variation of rainfall and temperature influences the cultivation and conservation of medicinal plants. It also influence farming practices of the local people (BBS, 2009).

Data Collection: In the present survey of ethno-botany, a total of 146 plant species under 126 genera and 64 families were collected and recorded for their use in various ailments. A total of 150 Santal people having an age range 22-84 years were interviewed using semi-structured interviewed method (Alexiades, 1996). Professionally they were peasant, day labor, farmer, betel leaf cultivators, house wives, medicine men, small shop keepers etc. Among them 70 were female and rest 80 were male. Regular field studies were made in the study area during the period. The information about the plants used for various diseases was gathered through interviews and discussion with the elderly people, medicine men and traditional medical practitioners were also consulted.

Plant Identification: Plant specimens with flowers and fruits were collected and processed using standard herbarium techniques. Herbal plants referred by these people were authentically identified with the help of Hooker (1961), Prain (1963), Kirtikar and Basu (1987), Ahmed et al. (2008-2009), Rahman (2013i, 2013l); Huq (1986) and Pasha and Uddin (2013). The voucher specimens are stored at The Herbarium, Department of Botany, and University of Rajshahi for future reference.





Figure 1. Interview with Santal Tribal Practitioners in the study area.

3. Results and Discussion

The present paper focuses on the ethno-botanical investigation of traditional medicinal plants used by Santal tribe at sadar Upazila of Chapai Nawabganj district, Bangladesh conducted during December 2013 to June 2015. In the present ethno-botanical survey, a total of 146 species belonging to 126 genera and 64 families were recorded. For each species scientific name, local name, habit, family, ailments to be treated, mode of treatment and part(s) used are provided. Analysis of the data based on habits showed that leading medicinal plant species 59 belonged to herbs, 45 trees, 24 shrubs and 18 climbers. Giday (2001) reported that herb is the leading to medicinal species in his article on Zay people of Ethiopia whereas Teklehamymanot and Giday (2007) reported same result among the people of Zegie Peninsula, Northwestern Ethiopia. The present report on leading medicinal species as herb is similar to the above findings.

Use of plant parts as medicine shows variation (Table 1). Leaves (82.78%) are the leading part used in a majority of medicinal plants followed by 29.80% fruits, 36.42% roots, 19.20% bark, 24.50% whole plant, 9.93% stem, 2.65% latex, 1.32% bulb, 10.60% rhizomes, 9.27% seed, 4.63% gum, 1.32% leaf stalks, 1.32% petiole, 9.93% flower, 2.65% juice, 1.99% cotton, 0.67% pericarp, 2.65% young buds, 0.67% pods, 1.32% grain, 0.67% central tender part (Table 1). Harvesting leaves for medicinal use has also been reported from Southern Ethiopia (Yirga, 2010). Herbal preparation that involves roots, rhizomes, bulbs, barks, stems or whole plants affects mother plants (Dawit and Ahadu, 1993). In the present study area this threat was minimal as leaves were the leading plants parts used for medicinal purposes.

Distribution of medicinal plant species in the families shows variation (Table 1). Astetraceae, Euphorbiaceae and Moraceae are represented by 8 species. Solanaceae is represented by 6 species. Each of Amaranthaceae, Casalpinaeae, Arraceae and Poaceae is represented by 5 species. Acanthaceae, Apocynaceae, Cucurbitaceae, Fabaceae, Rutaceae, and Lamiaceae are represented by 4 species. A single species in each was recorded by 31 families while two to three species in each was recorded by 19 families. The survey indicated that the common medicinal plant families in the study area are Amaranthaceae, Apocynaceae, Araceae, Acanthaceae, Caricaceae, Combretaceae, Cucurbitaceae, Liliaceae, Meliaceae, Moringaceae, Moraceae, Rutaceae and Solanaceae. These findings of common medicinal plant families in the study are in agreement with Yusuf et al. (1994, 2006, 2009); Ghani (2003); Khisha(1996); Khan and Huq (1975); Khan (1998) and Anisuzzaman (2007).

The survey has also recorded 102 categories of uses of 146 medicinal plants (Table 1). This is the indication of rich knowledge of medicinal uses of plants by the local people in the study area. Among them, 18 species were used to cure cough, 18 species were used to cure fever, 15 species were used to cure dysentery, and 12 species for each of diarrhea, 11 species were used to cure body weakness, 10 species for stomach trouble, and 9 species for each of burning sensation, skin diseases and ringworms. 8 species for diabetes, piles and rheumatism, 7 species for cold, pains, snake bite, threadworms and wounds. The most frequently used species for the treatment of different diseases are *Acalypha indica*

L., *Adhatoda vasica* Nees., *Achyranthes aspera* L., *Aegle marmelos* (L.) Correa, *Aloe vera* (L) Burm.f., *Allium cepa* L., *Allium sativum* L., *Ananas sativus* Schult.f., *Andrographis paniculata* (Burm.f.) Wall. ex Nees., *Argemone mexicana* L., *Asparagus racemosus* L., *Azadirachta indica* A. Juss., *Bombax ceiba* L., *Brassica napus* L., *Capsicum frutescens* L., *Carica papaya* L., *Coccinia grandis* (L.) Voigt, *Cynodon dactylon* (L.) Pers., *Ficus racemosa* L., *Eclipta alba* (L.) Hassk., *Justicia gendarussa* (L.) Sweet., *Lawsonia inermis* L., *Mimosa pudica* L., *Moringa oleifera* Lam., *Musa sapientum* Linn., *Ocimum sanctum* L., *Phyllanthus emblica* L., *Syzygium cumini* (L.) Skeel., *Terminalia arjuna* (Roxb. ex DC.) Wight & Arn., *Terminalia chebula* (Gaertn.) Retz. and *Vitex negundo* L. Among the medicinal use of plants, the survey reported a good number of new uses those were not mentioned in the previous literatures Yusuf et al. (1994, 2006, 2009); Ghani (2003), Khisha (1996); Khan and Huq (1975); Khan (1998) and Anisuzzaman (2007).

The results of this investigation in the study area demonstrate the importance of ethno-botanical knowledge about medicinal plants in treating various human ailments. However, the study area is losing its natural vegetation cover with the medicinally valuable plant species. Most of the important plant species are getting very rare as confirmed by elders and observation during the field work. The plant species are facing threats in their natural habitats from various human activities. Hence, it is essential to study and document the local knowledge, which can provide valuable information to pharmacologists in screening of individual species and their plants constituents. Therefore, the present study will be useful for researchers in the field of ethnobotany, ethnomedicinal and pharmacology for further studies. The study also suggested that the present information on medicinal use of plants by local and ethnic community may be used for botanical and pharmacological research in future for the discovery of new sources of drugs.

Table1. Medicinal plants and formulations of Santal tribal practitioners at the village Jamtala of Chapai Nawabganj district, Bangladesh.

S/N	Scientific name	Local Name	Family name	Habit	Parts used	Ailments and treatment process
1	<i>Abelmoschus esculentus</i> (L.) Moench.	Dherosh	Malvaceae	Shurb	Fruits	Fruits juice mixed with cold water and sugar is used for Female weakness. Fruits juice mixed with cold water is used for stomachic.
02	<i>Abroma augustum</i> (L.) f.	Ulat Kambal	Sterculiaceae	Shurb	Leaf stalks	Juice made from leaf stalks is used for weakness. Root bark extracts is used in regulates irregular menses and used to cure pain.
03	<i>Acacia nilotica</i> (L.) Del.	Babla	Mimosaceae	Tree	Barks, pods, leaves	Bark extracts is taken orally to cure bronchitis. Pods are prescribed in dysentery. Decoction of leaves is used for leucoderma.
04	<i>Acalypha indica</i> L.	Muktajuri	Euphorbiaceae	Herb	Leaves	Decoction of dry leaves powder with little Garlic is given to children to expel worms. Leaf paste with lime juice is used to cure ringworms.
05	<i>Achyranthes aspera</i> L.	Apang	Amaranthaceae	Herb	Root	Decoction of root is used in traumatic injury. Juice made from leaves is used in tonsillitis.
06	<i>Aegle marmelos</i> (L.) Corr.	Bel	Rutaceae	Tree	Roots	Roots extract mixed with cow milk and sugar is taken to cure dysentery. Juice of root mixed with water is used in heart disease.
07	<i>Albizia procera</i> (Roxb.) Benth.	Koroi	Mimosaceae	Tree	Bark	Bark-boiled water with table salt is prescribed to expel threadworms.

08	<i>Alocasia indica</i> (Roxb.) Schott.	Mankachu	Araceae	Herb	Root stocks	The ash of the rootstocks mixed with honey is used in cases of aphthae. Decoction of root stock is used for leprosy and piles. Pound fresh part applied on the affected area, treating for snake bite.
09	<i>Aloe vera</i> (L) Burm. f.	Grita kumari	Aloeaceae	Herb	Leaves	Leaves Juice mixed with sugar is used to remove body weakness specially sex problem. The juice of the leaves is used externally for burns and sprains. Paste prepared from leaf is used for skin care.
10	<i>Allium sativum</i> L.	Rosun	Lilaceae	Herb	Leaf	Garlic is taken with hot rice to treat high blood pressure. Slightly warm juice of leaves is used in cough. Paste prepared from bulb is applied to the affected areas to treat leprosy.
11	<i>Allium cepa</i> L.	Piaj	Liliaceae	Herb	Bulb	Warm blub juice along with <i>Brassica napus</i> oil is taken massage the whole body to cure cough. Macerated bulb juice is applied on the affected area for snake bite.
12	<i>Alstonia scholaris</i> (L.) R. Br.	Chatim	Apocynaceae	Tree	Milky juice	The milky juice mixed with oil used in earache. Roots juice mixed with milk is used for leprosy. The milky juice is used in ulcers. Paste made from dry bark is used in rheumatism.
13	<i>Alternanthera philoxeroides</i> (Mart.) Griseb.	Helencha	Amaranthaceae	Herb	Whole plant	Plant juice is used for fever and malaria.
14	<i>Amaranthus spinosus</i> L.	Katanotey	Amaranthaceae	Herb	Leaves, root	Leave paste is given to burning wounds. Leaves juice is used for dysentery. Juice made from root extracts is used for gonorrhea. Decoction of the herb is used as toothache.
15	<i>Amaranthus viridis</i> L.	Notey	Amaranthaceae	Herb	Whole plant	The plant juice mixed with water is used in leprosy, stomachic and piles.
16	<i>Amorphophallus campanulatus</i> (Roxb.) Bl. ex. Decne.	Olkachu	Araceae	Herb	Tuber	Curry of tuber is used in abdomen pain and asthma. Infusion of the leaf stalks is useful in bites of poisonous insects. Curry of tuber is taken orally to cure piles.
17	<i>Andrographis paniculata</i> Wall ex Nees	Kalomegh	Acanthaceae	Herb	Leaves	Decoction of leaves is used in lung infections. Leaf paste is applied externally or infected area until cured leprosy. Juice obtained from macerated leaves is mixed with water is used in liver disorders.
18	<i>Annanas sativus</i> Schult. f.	Anaras	Bromeliaceae	Herb	Flower	Young flower extract mixed with water is used in abortion. Extract prepared from young leaf is taken to stop vomiting.

19	<i>Anthocephalus chinensis</i> (Lamk.) Rich. exWalp.	Kadam	Rubiaceae	Tree	Leaves, bark	A decoction of the leaves is used as a gargle in case of aphthae. Decoction of bark is used in febrifuge.
20	<i>Areca catechu</i> L.	Shupari	Areaceae	Tree	Root	The juice of the young tender leaves mixed with oil is applied as an embrocation in cases of lumbago. Decoction of the root used in toothache.
21	<i>Argemone mexicana</i> L.	Shialkanta	Papaveraceae	Herb	Latex	Juice made from latex is used in jaundice. Root paste and latex is used for skin cracks.
22	<i>Artocarpus heterophyllus</i> Lamk.	Kathal	Moraceae	Tree	Unripe fruits, root, latex	Curry made from unripe fruits is used for astringent. Decoction of roots is used for diarrhea. Latex obtained from the plant is used in skin diseases and glandular swelling.
23	<i>Artocarpus lacucha</i> Buch.-Ham	Deua	Moraceae	Tree	Seeds	Seeds paste mixed with water is administered to cure constipation.
24	<i>Asparagus racemosus</i> Willd.	Shotomuli	Liliaceae	Climber	Roots	Root paste is used to cure seminal weakness. Decoction of root juice is taken to promote lactation. Root juice used in leucorrhoea.
25	<i>Averrhoa carambola</i> L.	Kamranga	Oxalidaceae	Tree	Fruits, Leaves	Decoction of leaves and fruits is taken to cure influenza fever. Decoction of fruits is taken to cure hepatic colic. Leaves paste is used for scabies.
26	<i>Azadirachta indica</i> A. Juss.	Neem	Meliaceae	Tree	Leaves	Paste of leaves is used in chicken pox and skin diseases. Juice of leaves is used in jaundice. Decoction of leaves is used as a gargle which cures swollen gums pain and pyorrhea.
27	<i>Bambusa arundinacea</i> (Retz.) Willd	Bash	Poaceae	Tree	Roots, leaf	Decoction of roots is used to treat general debility. Decoction of the leaf bud is administered to encourage free discharge of menses or lochia after delivery. Bamboo cotton mixed with <i>Brassica napus</i> oil is used to cure old wounds and skin diseases. One kind of cotton present in outer layer of bamboo which is used to arrest bleeding in cuts.
28	<i>Basella alba</i> L.	Puishak	Basellaceae	Climber	Leaves	Paste made from leaves is used in burning sensation. Juice made from leaves is used in constipation. Root chewed for toothache.
29	<i>Benincasa hispida</i> (Thunb.) Cogn.	Chalkumra	Cucurbitaceae	Climber	Seeds	Juice made from seeds is used in helminthiasis.

30	<i>Bombax ceiba</i> L.	Shimul	Bombacaceae	Tree	Roots, gum	Roots extracts mixed with boiled water are given for sexual weakness in males. A gum paste is used for burning sensation of body. Grinding decoction of root-bark is taken to cure rheumatism.
31	<i>Borassus flabellifer</i> L.	Taal	Arecaceae	Tree	Juice, Young leaves	Juice obtained from the plant is used in body weakness and expel threadworms. The juice of young leaves mixed with water is given in cases of dysentery.
32	<i>Bryophyllum pinnatum</i> (Lam.) Oken	Pathor kuchi	Crassulaceae	Herb	Leaves	Juice made from leaves is used in blood dysentery. Crushed leaves mixed salt used for titbut and stomachic.
33	<i>Brassica napus</i> L.	Sorisha	Brassicaceae	Herb	Seeds, oil	Slightly warm oil is used for cold, cough and neuralgic. Plaster of mustard oil is used in gout. Curry of leaves is used in stomachic.
34	<i>Cassia fistula</i> L.	Sonalu	Caesalpiniaceae	Tree	Fruits, young leaves	Fruits pulp is considered good application for gout. Juice of the young leaves is used to cure ringworms.
35	<i>Canna indica</i> L.	Kolaboti	Cannaceae	Herb	Root	Decoction of root juice mixed with water is used in dropsy. Macerated Rhizome paste is used in ringworm.
36	<i>Carica papaya</i> L.	Pepe	Caricaceae	Tree	Fruits	Fruits pulp with bellam is used for abortion and stomachic.
37	<i>Carissa carandas</i> L.	Karomcha	Apocynaceae	Tree	Fruits	The fruit has been used remedy for diabetes.
38	<i>Cajanus cajan</i> (L.) Huth.	Arhor daal	Fabaceae	Shurb	Leaves, Seeds	Decoction leaves and seeds are used in cough and also used to check secretion of mother's milk. Juice made from leaves is used in jaundice.
39	<i>Capsicum frutescens</i> L.	Marich	Solanaceae	Shrub	Fruits, leaves	Powder of dried fruit is made into paste with water and fried with hot rice is given in blood dysentery. Fruits extract along with lemon juice and sugar is used in cold. Paste of leaves is used in headache.
40	<i>Calotropis procera</i> (Aiton) W. T. Aiton	Shet Akand	Asclepiadaceae	Shrub	Root bark	Decoction of Root bark is used in dyspepsia and indigestion. Warm leaf paste is used in paralyzes part. Along with mustard oil mucus or gums paste is used in rheumatism.
41	<i>Cestrum nocturnum</i> L.	Hasnahena	Solanaceae	Shrub	Leaf	Crushed leaf paste is used for headache.
42	<i>Celosia cristata</i> L.	Morogful	Amaranthaceae	Herb	Flowers	Juice made from flowers extract is used for excessive menstrual discharges.

43	<i>Centella asiatica</i> (L.) Urban.	Thankuni	Apiaceae	Herb	Whole plant	Juice made from whole plant taken to cure tuberculosis.
44	<i>Chenopodium album</i> L.	Batuashak	Chenopodiaceae	Herb	Leaves	Decoction of flowers and buds are used in children weakness and stomach trouble. Juice obtained from leaves is used in hepatic disorders.
45	<i>Citrus aurantifolia</i> (Christ.) Sw.	Lebu	Rutaceae	Shrub	Fruits	Juice obtained from fruits along with warm water and honey is used in catarrhal fever.
46	<i>Clitoria ternatea</i> L.	Oporajita	Fabaceae	Herb	Roots	Decoction of the root is taken to cure elephantiasis, headache and tuberculous glands.
47	<i>Coccinia grandis</i> (L.) Voigt	Telakucha	Cucurbitaceae	Climber	Leaves	Warmed juice obtained from plant is used in diabetes. Crushed leaves juice mixed with water are used for fever and vomiting.
48	<i>Colocasia esculenta</i> (L.) Schott.	Kochu	Araceae	Herb	Peltioles	The pressed juice of the peltioles is applied externally in athlete's foot and stop bleeding from cuts. Crushed leaf juice is taken orally to treat tumours.
49	<i>Coriandrum sativum</i> L.	Dhone	Apiaceae	Herb	Whole plant	Juice of whole plant mixed with salt is used for cold, cough and fever.
50	<i>Cocos nucifera</i> L.	Narikel	Arecaceae	Tree	Oil, fruit	Coconut oil is used for burning sensation of body. Water of unripe fruit is used in diarrhea and dysentery.
51	<i>Commelina benghalensis</i> L.	Kanshira	Commelinaceae	Herb	Whole plant	Decoction of whole plant is used in leprosy. Crushed leaves juice is applied in psoriasis. Pound Fresh part applied on the affected area, treating for snake bite.
52	<i>Corchorus capsularis</i> L.	Titapat	Tiliaceae	Shrub	Leaves	Crushed leaves mixed with water are useful in acute dysentery. Curry of leaves is used in gastric problem.
53	<i>Costus speciosus</i> (Koenig) Sm.	Keu	Costaceae	Herb	Tuber	Chutney made from the burnt tuber, sugar and tamarind taken for dysentery. Rhizome paste is used externally body pains. Rhizome paste is taken internally when urine contains blood.
54	<i>Croton bonplandianum</i> Baill.	Croton	Euphorbiaceae	Herb	Leaves, seeds	Juice obtained from leaves is used in cough. Seed paste is applied locally on eczema and ringworms.
55	<i>Curcuma longa</i> L.	Holud	Zingiberaceae	Herb	Rhizome	Fresh rhizome juice mixed with honey is taken for cold. Paste made from rhizome is used in boils, itches, scabies and eczema. Fresh rhizome juice along with salt is prescribed for intestinal worms.

56	<i>Curcuma zedoaria</i> Rosc.	Sothi	Zingiberaceae	Herb	Rhizomes and tubers	Grinding, decoction of rhizomes and tubers mixed with water is taken orally to cure stomachic and throat.
57	<i>Cuscuta reflexa</i> Roxb.	Shornolota	Cuscutaceae	Climber	Whole plants, stem	Macerated leaf paste is used to cure infection. Juice made from stem is used in stomach pain.
58	<i>Cynodon dactylon</i> (L.) Pers.	Durbaghas	Poaceae	Herb	Whole plant	Decoction of whole plant is taken orally to cure cough and hiccup. Macerated fresh juice is used in fresh cuts and wounds to stop bleeding.
59	<i>Cyperus rotundus</i> L.	Mutha	Cyperaceae	Herb	Tubers	Decoction of the tubers is used in fever. Macerated root paste is used to cure sores and wounds.
60	<i>Datura metel</i> L.	Dhutura	Solanaceae	Shrub	Flowers, leaves	Pound fresh part and applied on the affected area for pains. Paste of leaves with neem paste is used in skin diseases.
61	<i>Diospyros malabarica</i> (Desr.) Kostel	Gaab	Ebenaceae	Tree	Fruits	Chewing of fruit cures blisters in mouth.
62	<i>Eclipta alba</i> (L.) Hassk	Kalokeshi	Asteraceae	Herb	Leaves	Pounded leaves mixed with cold water are used in constipation. Grinding, decoction; Taken orally for infantile diarrhea.
63	<i>Enydra fluctuans</i> Lour	Helencha	Asteraceae	Herb	Whole plant	Curry with fish is used in long weakness after fever. Extract of whole plant is used in hand and leg swelling.
64	<i>Eichhornia crassipes</i> (Mart.) Sol.-Lau.	Kochuri pana	Pontederiaceae	Herb	Whole plant	Juice of the plant is used in asthma. Plant juice taken orally and pulp used externally is used in goiter.
65	<i>Elaeocarpus robustus</i> Roxb.	Jolpai	Elaeocarpaceae	Tree	Fruits, leaf	Juice made from fruits is used in bronchitis, cough and cold. Unripe fruits prescribed in diarrhea and dysentery. Young leaves are used as a mouth-wash for inflamed gums.
66	<i>Erythrina variegata</i> L.	Mother	Fabaceae	Tree	Root	Extract of root is taken to control nematode.
67	<i>Eupatorium triplinerve</i> Vahl.	Ayapan	Asteraceae	Shrub	Leaf	Extract prepared from leaf is taken to cure fever. Decoction of the leaves is used against various kinds of haemorrhage.
68	<i>Euphorbia antiquorum</i> L.	Sibgach	Euphorbiaceae	Shrub	Stem bark	Decoction of stem bark taken orally to cure gout.
69	<i>Euphorbia hirta</i> L.	Dudhiya	Euphorbiaceae	Herb	Whole plant	Grinding decoction of whole plant is taken to cure bronchitis.
70	<i>Feronia limonia</i> (L.) Swingle	Kodbel	Rutaceae	Tree	Seeds, leaves	Powder of seeds mixed water is taken for heart disease. Leaves juice is used for vomiting.

71	<i>Ficus benghalensis</i> L.	Bot	Moraceae	Tree	Young buds	Decoction of young buds is used in bronchitis, diarrhea, malaria and dysentery. Juice obtained from aerial roots is used to obstinate vomiting.
72	<i>Ficus religiosa</i> L.	Pakur	Moraceae	Tree	Fruits	The dried fruit, pulverized and taken in water for a fortnight removes asthma.
73	<i>Ficus racemosa</i> L.	Jagdumur	Moraceae	Tree	Gum, fruits	Gum is used mixed with water for treatment of astringent, acidity, diarrhea and diabetes. Fruits extracts or cooked vegetable are taken orally for dry cough.
74	<i>Ficus hispida</i> L. f.	Khoka dumur	Moraceae	Tree	Fruits	Fruits juice mixed with water is prescribed for diabetic patients. Decoction of fruits is used for jaundice.
75	<i>Glinus oppositifolius</i> (L.) A. DC.	Gima shak	Molluginaceae	Herb	Whole plant	Warmed herb moistened with castor oil issued to cure earache.
76	<i>Hemidesmus indicus</i> (L.) R. Br.	Anantamul	Asclepiadaceae	Climber	Root	Powder of root mixed with cold water is used in indigestion. Root juice along with milk is used in piles.
77	<i>Heliotropium indicum</i> L.	Hatishur	Boraginaceae	Herb	Leaves	Juice made from leaves is used in dog bite and insect bite.
78	<i>Hibiscus rosasinensis</i> L.	Joba	Malvaceae	Shrub	Flowers	Flowers paste is used for burning wounds. Juice made from flowers buds is used for astringent. Juice made from flowers buds mixed with water is used in seminal weakness.
79	<i>Ipomoea aquatica</i> Forssk.	Kalmishak	Convolvulaceae	Climber	Leaves, stem	Dried leaves powder mixed with water is used in biliousness liver complaints and jaundice. Juice of stem and leaf is used in nervous and General disability.
80	<i>Ipomoea alba</i> L.	Dudhkolmi	Convolvulaceae	Climber	Leaves	Decoction of leaves is used in wounds.
81	<i>Ipomoea batatas</i> (L.) Lamk.	Mistialu	Convolvulaceae	Climber	Tuber	Tuber juice or paste is used for skin disease.
82	<i>Jatropha gossypifolia</i> L.	Lalkundu	Euphorbiceae	Shrub	Leaves	Juice made from leaves is used in diabetes.
83	<i>Justicia gendarussa</i> L.	Jagath madan	Acanthaceae	Shrub	Leaves	Paste prepared from the leaves is used for chest pain.
84	<i>Justicia adhatoda</i> Nees.	Basak	Acanthaceae	Shrub	Leaves	Juice obtained from macerated leaves is taken to cure fever. Decoction of leaves juice is used in bleeding piles.
85	<i>Lablab purpureus</i> (L.) Sweet.	Shim	Fabaceae	Climber	Leaves	Leaves paste is used for burning sensation, tonic and febrifuge.
86	<i>Lasia spinosa</i> (L.) Thw.	Kanta kachu	Araceae	Herb	Stem, Leaves	Stem and leaves are curry with fish is used to cure rheumatism.

87	<i>Lawsonia inermis</i> Linn.	Mehedi	Lythraceae	Tree	Leaves	Leaves paste mixed with neem paste and water administered for gastrointestinal ulcers. Leaves paste is used for old skin diseases.
88	<i>Lagenaria siceraria</i> (Mol.) Stan.	Lau	Cucurbitaceae	Climber	Leaves, fruits	Pulp of the fruit is used for cooling, diuretic, muscular pain and cough. Juice obtained from leaves is used as powerful laxative. Juice of fruits mixed with water is used for piles.
89	<i>Lagerstroemia speciosa</i> (Linn.) Pres.	Jarul	Lythraceae	Tree	Leaves, Bark	Crushed leaves and bark extracts is used for astringent.
90	<i>Leucas cephalotes</i> (Roth.) Spreng.	Danda kolos	Lamiaceae	Herb	Flowers, leaves	Decoction of flowers is taken orally for cold. Paste made from leaves is used in eczema.
91	<i>Leucas aspera</i> (Willd.) Link.	Setodrone	Lamiaceae	Herb	Leaves and root	Macerated leaves juice taken orally and root paste is used in same time for snake-bite.
92	<i>Leonurus sibiricus</i> L.	Rakto drone	Lamiaceae	Herb	Root, Leaves	Decoction of root and leaves are taken for febrifuge. Dried fruit powder is used in menstrual diseases.
93	<i>Mangifera indica</i> L.	Aam	Anacardiaceae	Tree	Leaves, gum	Decoction of the leaves is given to cure fever and toothache. Root bark made a paste with water is used for wormicidal. Gums paste is used in skin diseases.
94	<i>Mimosa pudica</i> L.	Lojjaboti	Mimosaceae	Climber	Roots	Roots of the plant soaked in raw cow milk are used in snake bites.
95	<i>Mimusops elengi</i> L.	Bokul	Sapotaceae	Tree	Stem-bark	Decoction of stem bark is popularly used in swelling.
96	<i>Moringa oleifera</i> Lam.	Sojna	Moringaceae	Tree	Roots, seed	Roots extract juice is used for abdomen pain and fever. Macerated root juice mixed with water is used for abortion. Seed oil is given for rheumatism.
97	<i>Morus indica</i> L.	Tut	Moraceae	Tree	Leaf, Bark	Decoction of leaf and bark is used in cough and heat anting.
98	<i>Murraya paniculata</i> (L.) Jack	Kamini	Rutaceae	Shrub	Roots	Decoctions of roots are taken to cure rheumatism.
99	<i>Musa sapientum</i> Linn.	Kola	Musaceae	Herb	Bark	Spadix is taken as curry to control diabetes. Bark juice is used Snake bite. Stem juice is applied to stop bleeding.
100	<i>Nerium indicum</i> Mill.	Karobi	Apocynaceae	Shrub	Leaves	Along with water boiled leaves paste is used against insect bite. Juice of root bark is used for wounds. Decoction of leaves is used in swelling.

101	<i>Nymphaea nouchali</i> Burm. f.	Sapla	Nymphaeaceae	Herb	Flowers, rhizomes	Paste made from flowers is used in burning sensation. Dried powder of rhizomes mixed with normal water is used in dysentery and dyspepsia.
102	<i>Nymphaea stellata</i> Willd.	Chhoto Shaluk	Nymphaeaceae	Herb	Roots, Stems	Infusion of the roots and stems are used in diuretic, urinary tract and emollient. Decoction of the flowers is used in narcotic.
103	<i>Ocimum sanctum</i> L.	Tulshi	Lamiaceae	Herb	Leaves	Slightly warmed leaf juice is used to treat bronchitis, cough and cold. Leaf paste mixed with salt applied externally for itches.
104	<i>Oryza sativa</i> L.	Dhan	Poaceae	Herb	Grain	Rice water is drink in febrile diseases. The roasted grain mixed with an equal amount of palm sugar is prescribed strychnos poisoning.
105	<i>Oxalis corniculata</i> L.	Amrul	Oxalidaceae	Herb	Whole plant	Pound fresh part applied on the affected area, treating for injury and wounds. Juice made from whole plant is used to cure scurvy.
106	<i>Paederia foetida</i> L.	Gandha vaduli	Rubiaceae	Climber	Leaves	Juice of leaves is taken to cure paralysis. Juice of leaves along with macerated juice of turmeric juice is used in piles.
107	<i>Persicaria hydropiper</i> L.	Pani Morich	Polygonaceae	Herb	Whole plant, flowers	Pound fresh part applied on the affected area, treating for eczema. Pound fresh part applied on the affected area, treating for furuncle. The juice of flowers is used against gout.
108	<i>Phyllanthus reticulatus</i> Poir.	Chitki	Euphorbiaceae	Shurb	Leaves	Decoction of the bark is considered alterative and attenuant. Leaves juice with water is taken orally for diarrhea of infants.
109	<i>Phyllanthus emblica</i> L.	Amloki	Euphorbiaceae	Tree	Fruits	Juice of fruits is used in mouth-wash, toothache and skin diseases. Dry fruits powder mixed with water is used in stomachic.
110	<i>Phyla nodiflora</i> (L.) Greene	Bhui Okara	Verbenaceae	Herb	Leaves, Tender stalks	Infusion of the leaves and tender stalks juice is given to children suffering from indigestion and to women after delivery.
111	<i>Phoenix sylvestris</i> (L.) Roxb.	Khajur	Arecaceae	Tree	Central tender part	Decoction of central tender part is used to cure gonorrhoea. Crashed fresh leaves are soaked in water overnight and the water is used to expel threadworms.
112	<i>Psidium guajava</i> L.	Peyara	Myrtaceae	Tree	Root	Root paste mixed with water is used to treat diarrhea and dysentery. A young leaf is used daily for mouth-wash.

113	<i>Pistia stratiotes</i> L.	Topapana	Araceae	Herb	Root, leaves	Macerated roots juice is used for wounds. Decoction of the leaves is diuretic and prescribed in diseases of the urinary tract. The ashes of the plant are applied externally to ringworm on the scalp.
114	<i>Punica granatum</i> Linn.	Dalim	Punicaceae	Tree	Young stem	Decoction of young stem is used for abdominal pain. Fruits juice is used for diarrhea. Decoction of pericarp is taken for piles.
115	<i>Piper nigrum</i> L.	Golmarich	Piperaceae	Climber	Dry fruits	Decoction of the dried fruits is used for cough. Fruits powder mixed with water is used for gastric trouble.
116	<i>Piper longum</i> L.	Pipul	Piperaceae	Climber	Bark	Bark extract mixed with water is used for body weakness. Cooked green leaves and dried or fresh fruits mixed with vegetables are used for female lactic increase in the lactation stage. Bark extract mixed with water is used for lumbar muscle degeneration.
117	<i>Piper betle</i> L.	Betel	Piperaceae	Climber	Leaves	Decoction of leaves is used for cough and heatstroke. Macerated leaves juice is used for passing of semen with urine.
118	<i>Portulaca oleracea</i> L.	Nunia shak	Portulacaceae	Herb	Whole plant	Decoction of whole plant mixed with fresh water taken to cure diarrhea and hypertension.
119	<i>Polyalthia longifolia</i> (Sonn.)Thw.	Debdaru	Annonaceae	Tree	Bark	Decoction of bark is used for fever.
120	<i>Rauwolfia serpentina</i> Benth.	Sarpa Gandha	Apocynaceae	Shurb	Roots	Grinding, decoction of roots is used in high blood pressure, febrifuge and sedative.
121	<i>Ricinus communis</i> L.	Bherenda	Euphorbiaceae	Shurb	Leaves, seed	Juice of tender leaves is given with sugar in dysentery. Seed oil is externally used in rheumatism and joint pains.
122	<i>Ruellia suffruticosa</i> Roxb.	Chot-pote	Acanthaceae	Shrub	Roots	Decoction of Roots is used in abortion and gonorrhoea.
123	<i>Saccharum officinarum</i> L.	Aakh	Poaceae	Shurb	Stem	Stem juice is used to cure fever and jaundice.
124	<i>Saraca indica</i> L.	Ashok	Caesalpinaceae	Tree	Bark, root	Bark juice is used in anemia and irregular menses. Juice of root extract is used in dysentery.
125	<i>Senna alata</i> (L.) Roxb.	Dad mardan	Caesalpinaceae	Shurb	Leaves, Flowers, Stem-bark	Decoction of leaves and flowers is used for eczema and mouth-wash. Paste made from stem bark is also used in eczema.
126	<i>Senna sophera</i> (L.) Roxb.	Kalka sunde	Caesalpinaceae	Shrub	Leaves	Juice made from leaves is used to cure hiccup and ringworms.

127	<i>Sida cordifolia</i> L.	Berela	Malvaceae	Shrub	Whole plant	Pound fresh part applied on the affected area, treating for traumatic injury.
128	<i>Solanum nigrum</i> L.	Titbegun	Solanaceae	Herb	Leaves, fruits	Decoction of leaves is used to cure dropsy. Syrup of the fruit is used in fever. Paste of the green fruit is applied to ringworm.
129	<i>Solanum torvum</i> Swartz.	Hat Begun	Solanaceae	Shrub	Fruits	Boiled fruits mixed with rice to expel thread-worms.
130	<i>Streblus asper</i> Lour.	Sheora	Moraceae	Tree	Bark , stem	Bark and stem extracts mixed with water used in dysentery and wounds. Leaves juice is used in urinary inflammation.
131	<i>Syzygium cumini</i> (L.) Skeel.	Jam	Myrtaceae	Tree	Bark	Decoction of bark is used in asthma and wormicidal. Fruits juice is used in diabetes.
132	<i>Tagetes erecta</i> L.	Gendaphul	Asteraceae	Herb	Leaves	Infusion of the plant is used against rheumatism. Pounded leaves are applied over fresh cuts to stop bleeding.
133	<i>Tamarindus indica</i> L.	Tetul	Caesalpiaceae	Tree	Fruits	Juice made from fruits is used in diarrhea. Pulp of the ripe fruit is a house hold remedy for dysentery, fever and gastritis.
134	<i>Terminalia arjuna</i> (Roxb. ex DC.) Wight & Arn.	Arjun	Combretaceae	Tree	Stem bark	Stem bark extracts mixed with cold water is used in high blood pressure and heart disease. Stem bark powder mixed with oil is taken to bone fracture.
135	<i>Terminalia billirica</i> (Gaertn.) Roxb.	Bahera	Combretaceae	Tree	Green fruit	Decoction of green fruit taken to cure cough.
136	<i>Trapa bispinosa</i> Roxb.	Panifol	Trapaceae	Herb	Fruits	Fruit juice mixed with milk is taken to cure seminal weakness, leucorrhoea and nervous disorders.
137	<i>Tridax procumbens</i> L.	Tridhara	Asteraceae	Herb	Leaves	Crushed leaf juice mixed with water is used in bronchitis. Paste made from leaves is used in arrest bleeding in bruises and cuts.
138	<i>Tinospora cordifolia</i> Willd.	Guloncho	Menispermaceae	Climber	Leaf stalk, stem	Leaf stalk powder mixed with neem paste is used in diabetes. Juice obtained from fresh stems of the plant is mixed with cow milk used for gonorrhoea. Juice obtained from fresh stems of the plant is used in passing of semen with urine.
139	<i>Vernonia patula</i> (Dryand.) Merr.	Kukshim	Asteraceae	Herb	Whole plant	Pound fresh part applied on the affected area, treating for snake bite and swelling furuncle.

140	<i>Vitex negundo</i> L.	Nisinda	Verbenaceae	Shrub	Leaves	A decoction of the leaves along with long pepper is given in catarrhal fever. Leaf juice mixed with oil is used to treat sinuses and scrofulous sores.
141	<i>Wedelia chinensis</i> (Osbeck) Merr.	Maha vingoraj	Asteraceae	Herb	Leaves	Juice obtained from leaves along with cow milk is used in edema. Juice obtained from leaves along with salt is used for stop vomiting.
142	<i>Withania somnifera</i> (L.) Dunal.	Aswa gandha	Solanaceae	Shrub	Roots, Leaves	Decoction of root is used for asthma and hiccup. Infusion powder of 2-3 leaves mixed with water is used for diarrhea.
143	<i>Xanthium indicum</i> J. Koenig ex Roxb.	Hagra	Asteraceae	Herb	Whole plant	The ash of fruit is applied to sores of lip and mucous membrane of the mouth. Decoction of the plant is used for urinary and renal complaints.
144	<i>Zea mays</i> L.	Vutta	Poaceae	Shrub	Corn	Liquid extract of the corn silk is used in diuretic.
145	<i>Zingiber officinale</i> Roscoe.	Ada	Zingiberaceae	Herb	Rhizome	Decoction of dried ginger is used to cure asthma and cough. A mixture of ginger juice, leaf juice of <i>Ocimum sanctum</i> and honey is taken orally to infantile cough and catarrhal fever.
146	<i>Zizyphus mauritiana</i> Lamk.	Boroi	Rhamnaceae	Tree	Fruits	Young fruits are used for cough and improve digestion. Young stem and leaves are used in mouth cleanser.

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References

- [1] Ahmed, Z.U., Z.N.T. Begum, M.A. Hassan, M. Khondker, S.M.H. Kabir, M. Ahmad, A.T.A. Ahmed, A.K.A. Rahman and E. U. Haque, (Eds), (2008-2009). Encyclopedia of Flora and Fauna of Bangladesh.6-10.Angiosperms; Dicotyledons.Asiat. Soc. Bangladesh, Dhaka.
- [2] Alam, M.K., J. Choudhury and M.A. Hassan, MA. (1996). Some folk formularies from Bangladesh. Bangladesh J. Life Sci., 8(1): 49-63.
- [3] Alam, M.K. (1992). Medical ethno-botany of the Marma tribe of Bangladesh. Economic Botany, 46(3): 330-335.
- [4] Anisuzzaman, M., A.H.M. Rahman, M.H. Rashid, A.T.M. Naderuzzaman and A.K.M.R. Islam, (2007). An Ethnobotanical Study of Madhupur, Tangail, Journal of Applied Sciences Research, 3(7): 519-530.
- [5] Alexiades MN. (Ed)., (1996). Selected Guidelines for Ethno Botanical Research: A Field Manual. The New York Botanical Garden, New York.
- [6] Arzu, Y and T. Thiagarajan, (2016). Medicinal Plants used by the Rastafarian Community in Belize. International Journal of Herbal Medicine. 4(3): 15-20.
- [7] BBS (Bangladesh Bureau of Statistics), (2009). Statistical Year Book of Bangladesh, 23rd edition, Bangladesh Bureau of Statistics, Planning Division, Ministry of Planning Government of Peoples Republic of Bangladesh, Dhaka.
- [8] Chakma, S., M.K. Hossain, MK, B.M. Khan and M.A. Kabir, (2003). Ethno-botanical knowledge of Chakma community in the use of medicinal plants in Chittagong Hill Tracts, Bangladesh. MFP News XIII, (3): 3-7.
- [9] Choudhury, A.R. and M. Rahmatullah, (2012). Ethnobotanical study of wound healing plants among the folk medicinal practioners several district in Bangladesh. American-Eurasian Journal of Sustainable Agriculture, 6(4): 371-377.
- [10] Dawit, A. and Ahadu, A. (1993). Medicinal plants and enigmatic health practice of North Ethiopia, BerhaninaSelam Printing Enterprise, and Addis Ababa, Ethiopia.

- [11] Faruque, M.O. and S.B. Uddin, (2014). Ethnomedicinal study of the Marma community of Bandarban district of Bangladesh. *Academia Journal of Medicinal Plants*, 2(2): 014-025.
- [12] Ghani, A. (2003). *Medicinal Plants of Bangladesh*. Asiatic Society of Bangladesh, Dhaka.
- [13] Giday, M., (2001). An ethnobotanical study of medicinal plants used by the Zay people in Ethiopia. *CBM:sskriftserie*. 3: 81-99.
- [14] Hooker, J. D. (1961). *Flora of British India*. Vols.1-7. L. Reeve and Co. Ltd. London, U.K.
- [15] Isrer Tasannun, Farhana Akter Ruba, Borhan Uddin Bhuiyan, Kazi Mahbub Hossain, Jamila Khondokar, Ishita Malek, A.B.M. Anwarul Bashar, Mohammed Rahamatullah. (2015). Indigenous medicinal Practices: medicinal plants of Chakma tribal medicinal practitioners in Rangamati district. *American-Eurasian Journal of Sustainable Agriculture*. 9(5): 28-35.
- [16] Khan, M.S. and A.M. Huq, (1975). *Medicinal Plants of Bangladesh*, BARC, Dhaka, Bangladesh.
- [17] Khan, M.S. (1998). Prospects of Ethnobotany and Ethnobotanical Research in Bangladesh. In: Banik RL, Alam MK, Pei SJ, Rastogi A (eds.), *Applied Ethnobotany*, BFRI, Chittagong, Bangladesh, P. 24-27.
- [18] Khisha, B. (1996). *Chakma Talik Chikitsa*. Herbal Medicine Centre Committee, Rajban Bihar, Rajbari, Rangamati, Pp.1-136.
- [19] Kirtikar, K.R and B.D. Basu, (1987). *BD. Indian Medicinal Plants*. Vol. 1-4. Lalit Mohan Basu, Allahabad, Jayyed Press, New Delhi, India.
- [20] Malek, I., M.R. Miah, M.F. Khan, R.B.F. Awal, N.Nahar, I.Khan, S.Chowdhury and M. Rahmatullah, (2014b). Medicinal Plants of two practitioners in two Marma tribal communities of Khagrachhari district, Bangladesh, *American-Eurasian Journal of Sustainable Agriculture*. 8: 78-85.
- [21] Malek, I., N.Mia, M.E. Mustary, M.J. Hossain, S.M. Sathi, M.J. Parvez, M.Ahmed, S. Chakma, S. Islam, M.M. Billah and M. Rahmatullah, (2014a). Medicinal Plants of the Chakma Community of Rangapanir Chara area of Khagrachhari district, Bangladesh. *American-Eurasian Journal of Sustainable Agriculture*. 8: 59-68.
- [22] Moonmoon, M., S.A. Islam, S.T.J. Bristy, M.B. Kader, S. Akter, S.K. Pk, S.T. Ahmed, M.P. Mosharaf, M.J. Mahal and M. Rahmatullah, (2014). Medicinal Plant Knowledge of a Folk medicinal Practitioner in Aria Bazar Village, Bogra District, Bangladesh. *American-Eurasian Journal of Sustainable Agriculture*. 8: 124-131.
- [23] Nilima Mahnoor, Ive Farha Moonmoon, Tonmoy Saha, Kaosar Mahamud, Suborna Biswas, Erena Islam, Mohammed Rahmatullah. (2015). Medicinal Plants of a Folk Herbalist in Tangail District, Bangladesh. *American-Eurasian Journal of Sustainable Agriculture*. 9(4): 74-82.
- [24] Prain, D. (1963). *Bengal Plants*. Vols.1-2. Botanical Survey of India. Calcutta, India.
- [25] Rahman, A.H.M.M., S.K. Nitu, Z. Ferdows and A.K.M.R. Islam, (2013a). Medico-botany on herbaceous plants of Rajshahi, Bangladesh. *American Journal of Life Sciences*, 1(3): 136-144.
- [26] Rahman, A.H.M.M., M.W. Afsana and A.K.M.R. Islam, (2014). Taxonomy and Medicinal Uses on Acanthaceae Family of Rajshahi, Bangladesh, *Journal of Applied Science and Research*, 2(1): 82-93.
- [27] Rahman, A.H.M.M. and M. Akter, (2013). M. Taxonomy and Medicinal Uses of Euphorbiaceae (Spurge) Family of Rajshahi, Bangladesh. *Research in Plant Sciences*, 1(3): 74-80.
- [28] Rahman, A.H.M.M., S. Akter, R. Rani and A.K.M.R. Islam, (2015). Taxonomic Study of Leafy Vegetables at Santahar Pouroshova of Bogra District, Bangladesh with Emphasis on Medicinal Plants. *International Journal of Advanced Research*, 3(5): 1019-1036.
- [29] Rahman, A.H.M.M., M. Anisuzzaman, F. Ahmed, A.K.M.R. Islam and A.T.M. Naderuzzaman, (2008a). ATM. Study of Nutritive Value and Medicinal Uses of Cultivated Cucurbits. *Journal of Applied Sciences Research*, 4(5): 555-558.
- [30] Rahman, A.H.M.M., M. Anisuzzaman, S.A. Haider, F. Ahmed, A.K.M.R. Islam and A.T.M. Naderuzzaman, (2008b). Study of Medicinal Plants in the Graveyards of Rajshahi City. *Research Journal of Agriculture and Biological Sciences*, 4(1): 70-74.
- [31] Rahman, A.H.M.M., M.C. Biswas, A.K.M.R. Islam and A.T.M.N. Zaman, (2013b). Assessment of Traditional Medicinal Plants Used by Local People of Monirampur Thana under Jessore District of Bangladesh. *Wudpecker Journal of Medicinal Plants*, 2(6): 099-109.
- [32] Rahman, A.H.M.M. and A. Debnath, (2015). Ethno-botanical Study at the Village Pondit Para under Palash Upazila of Narsingdi District, Bangladesh. *International Journal of Advanced Research*, 3(5): 1037-1052.
- [33] Rahman, A.H.M.M., J.E. Gulsan, M.S. Alam, S. Ahmad, A.T.M. Naderuzzaman and A.K.M.R. Islam, (2012). An Ethnobotanical Portrait of a Village: Koikuri, Dinajpur with Reference to Medicinal Plants. *International Journal of Biosciences*, 2(7): 1-10.
- [34] Rahman, A.H.M.M. and M.I.A. Gulshana, (2014). Taxonomy and Medicinal Uses on Amaranthaceae Family of Rajshahi, Bangladesh. *Applied Ecology and Environmental Sciences*, 2(2): 54-59.
- [35] Rahman, A.H.M.M., M.M. Hossain and A.K.M.R. Islam, (2014b). Taxonomy and Medicinal Uses of Angiosperm weeds in the wheat field of Rajshahi, Bangladesh. *Frontiers of Biological and Life Sciences*, 2(1): 8-11.
- [36] Rahman, A.H.M.M., E.Z.M.F. Kabir, S.N. Sima, R.S. Sultana, M. Nasiruddin and A.T.M. Naderuzzaman, (2010). Study of an Ethnobotany at the Village Dohanagar, Naogaon. *Journal of Applied Sciences Research*, 6(9): 1466-1473.

- [37] Rahman, A.H.M.M. and M.A. Keya, (2015). Traditional Medicinal Plants Used by local People at the Village Sabgram under Sadar Upazila of Bogra District, Bangladesh. *Research in Plant Sciences*, 3(2): 31-37.
- [38] Rahman, A.H.M.M and A. Khanom, (2013). Taxonomic and Ethno-Medicinal Study of Species from Moraceae (Mulberry) Family in Bangladesh Flora. *Research in Plant Sciences*, 1(3): 53-57.
- [39] Rahman, A.H.M.M. and M.I.A. Parvin, (2014). Study of Medicinal Uses on Fabaceae Family at Rajshahi, Bangladesh. *Research in Plant Sciences*, 2(1): 6-8.
- [40] Rahman, A.H.M.M. and M.M. Rahman, (2014). An Enumeration of Angiosperm weeds in the Paddy field of Rajshahi, Bangladesh with emphasis on medicinal Plants. *Journal of Applied Science and Research*, 2(2): 36-42.
- [41] Rahman, A.H.M.M. and Rojonigondha, (2014). Taxonomy and Traditional Medicine Practices on Malvaceae (Mallow Family) of Rajshahi, Bangladesh. *Open Journal of Botany*, 1(2): 19-24.
- [42] Rahman, A.H.M.M., S.M. Jahan-E-Gulsan and A.T.M. Naderuzzaman, (2014c). Ethno-Gynecological Disorders of Folk Medicinal Plants Used by Santhals of Dinajpur District, Bangladesh. *Frontiers of Biological & Life Sciences*, 2(3): 62-66.
- [43] Rahman, A.H.M.M., N. Sultana, A.K.M.R. Islam and A.T.M.N. Zaman, (2013c). Study of Medical Ethno- botany of traditional medicinal plants used by local people at the village Genda under Savar Upazilla of district Dhaka, Bangladesh. *Online International Journal of Medicinal Plants Research*, 2(1): 18-31.
- [44] Rahman, A.H.M.M. (2014a). Ethno-gynecological study of traditional medicinal plants used by Santals of Joypurhat district, Bangladesh. *Biomedicine and Biotechnology*, 2(1): 10-13.
- [45] Rahman, A.H.M.M. (2014b). Ethno-medicinal Practices for the Treatment of Asthma, Diuretic, Jaundice, Piles, Rheumatism and Vomiting at the Village Abdullapur under Akkelpur Upazilla of Joypurhat District, Bangladesh. *International Journal of Engineering and Applied Sciences*, 1(2): 4-8.
- [46] Rahman, A.H.M.M., (2013a). Ethno-medico-botanical investigation on cucurbits of the Rajshahi Division, Bangladesh. *Journal of Medicinal Plants Studies*, 1(3): 118-125.
- [47] Rahman, A.H.M.M., (2013b). Graveyards angiosperm diversity of Rajshahi city, Bangladesh with emphasis on medicinal plants, *American Journal of Life Sciences*, 1(3): 98-104.
- [48] Rahman, A.H.M.M., (2013c). Medico-botanical study of commonly used angiosperm weeds of Rajshahi, Bangladesh. *Wudpecker Journal of Medicinal Plants*, 2(3): 044-052.
- [49] Rahman, A.H.M.M., (2013d). Medico-botanical study of the plants found in the Rajshahi district of Bangladesh. *Prudence Journal of Medicinal Plants Research*, 1(1): 1-8.
- [50] Rahman, A.H.M.M., (2013e). Medico-Ethnobotany: A study on the tribal people of Rajshahi Division, Bangladesh. *Peak Journal of Medicinal Plants Research*, 1(1): 1-8.
- [51] Rahman, A.H.M.M., (2013f). Traditional Medicinal Plants Used in the Treatment of different Skin diseases of Santals at Abdullapur Village under Akkelpur Upazilla of Joypurhat district, Bangladesh. *Biomedicine and Biotechnology*, 1(2): 17-20.
- [52] Rahman, A.H.M.M. (2013g). Ethno-medicinal investigation on ethnic community in the northern region of Bangladesh. *American Journal of Life Sciences*, 1(2): 77-81.
- [53] Rahman, A.H.M.M. (2013h). Ethno-botanical Survey of Traditional Medicine Practice for the Treatment of Cough, Diabetes, Diarrhea, Dysentery and Fever of Santals at Abdullapur Village under Akkelpur Upazilla of Joypurhat District, Bangladesh. *Biomedicine and Biotechnology*. 1(2): 27-30.
- [54] Rahman, A.H.M.M. (2013i). Angiospermic flora of Rajshahi district, Bangladesh. *American Journal of Life Sciences*, 1(3): 105-112.
- [55] Rahman, A.H.M.M. (2013j). An Ethno-botanical investigation on Asteraceae family at Rajshahi, Bangladesh. *Academia Journal of Medicinal Plants*, 1(5): 92-100.
- [56] Rahman, A.H.M.M. (2013k). Assessment of Angiosperm Weeds of Rajshahi, Bangladesh with emphasis on medicinal plants. *Research in Plant Sciences*, 1(3): 62-67.
- [57] Rahman, A.H.M.M. (2013l). A Checklist of Common Angiosperm Weeds of Rajshahi District, Bangladesh. *International Journal of Agricultural and Soil Science*, 1(1): 1-6.
- [58] Rahman, A.H.M.M., (2015a). Ethnomedicinal Survey of Angiosperm Plants used by Santal Tribe of Joypurhat District, Bangladesh. *International Journal of Advanced Research*, 3(5): 990-1001.
- [59] Rahman, A.H.M.M., (2015b). Traditional Medicinal Plants in the treatment of Important Human Diseases of Joypurhat District, Bangladesh. *Journal of Biological Pharmaceutical and Chemical Research*, 2(1): 21-29.
- [60] Rahman, A.H.M.M., (2015c). Ethno-botanical Survey of Anti-Diabetic Medicinal Plants Used by the Santal Tribe of Joypurhat District, Bangladesh. *International Journal of Research in Pharmacy and Biosciences*, 2(5): 19-26.
- [61] Rahman, A.H.M.M., E.Z.M.F. Kabir, A.K.M.R. Islam and A.T.M.N. Zaman, (2013d). Medico-botanical investigation by the tribal people of Naogaon district, Bangladesh. *Journal of Medicinal Plants Studies*, 1(4): 136-147.
- [62] Rahman, A.H.M.M. and A.K. Kumar, (2015). Investigation of Medicinal Plants at Katakhal Pouroshova of Rajshahi District, Bangladesh and their Conservation Management. *Applied Ecology and Environmental Sciences*, 3(6): 184-192.

- [63] Sadika Khan, Mehjaben Tumpa, M. Toreq-ul-Zaman, Shamima Akter, Md. Raziur Rahman, Ariful Islam, Masud Rana, Sharmin Jahan, Md. Ashraful Islam, Mohammed Rahmatullah. (2015). Folk Medicinal Practices among Tea Estate Workers: A Study in Moulvibazar District, Bangladesh. *American-Eurasian Journal of Sustainable Agriculture*. 9(1): 1-8.
- [64] Teklehamymanot, T. and Giday, M. (2007). An ethnobotanical study of medicinal plants used by the people in Zegie Peninsula Northwestern Ethiopia. *J. Ethnobiol. And Ethnomed.*3, 12, doi 10.1186/1746-4269-3-12.
- [65] Uddin, K., A.H.M.M. Rahman and A.K.M.R. Islam, (2014). Taxonomy and Traditional Medicine Practices of Polygonaceae (Smartweed) Family at Rajshahi, Bangladesh. *International Journal of Advanced Research*, 2(11): 459-469.
- [66] Uddin, M., S. Roy, M.A. Hassan and M.M. Rahman, (2008). Medicobotanical report on the Chakma people of Bangladesh. *Bangladesh J. Plant Taxon.*, 15(1): 67-72.
- [67] Uddin, M.Z., M.A. Hassan, M. Rahman and K. Arefin, (2012). Ethno-medico-botanical study in Lawachara National Park, Bangladesh. *Bangladesh J. Bot.*, 41(1): 97-104.
- [68] Uddin, M.Z., M.A. Hassan and M. Sultana, (2006). Ethnobotanical survey of medicinal plants in Phulbari Upazilla of Dinajpur District, Bangladesh. *Bangladesh J. Plant Taxon.*, 12(1): 63-68.
- [69] Uddin, M.Z., M.S. Khan and M.A. Hassan, (2001). Ethno medical plants records of Kalenga forest range (Habiganj), Bangladesh for malaria, jaundice, diarrhea and dysentery. *Bangladesh J.Plant Taxon.*, 8(1): 101-104.
- [70] Uddin, S.N., M.Z. Uddin, M.A. Hassan and M.M. Rahman, (2004). Preliminary ethno- medicinal plant survey in Khagrachhari district, Bangladesh. *Bangladesh J. Plant Taxon.*, 11(2): 39-48.
- [71] WHO (World Health Organization), (1999). Geneva, Switzerland.
- [72] Yirga, G., (2010). Ethnobotanical study of medicinal plants in and around Almata, Southern Tigray Northern Ethiopia. *Curr. Res. J. Biol. Sci.*, 2(5): 338-344.
- [73] Yusuf, M., J. Begum, M.N. Hoque and J.U. Choudhury, (2009). Medicinal plants of Bangladesh-Revised and Enlarged. *Bangladesh Coun. Sci. Ind. Res. Lab. Chittagong, Bangladesh*.
- [74] Yusuf, M., J.U. Choudhury, M.A. Wahab and J. Begum, (1994). Medicinal Plants of Bangladesh. *Bangladesh Council of Scientific and Industrial Research. Dhaka, Bangladesh*. Pp. 1-340.
- [75] Yusuf, M., M.A. Wahab, J.U. Choudhury and J. Begum, (2006). Ethno-medico-botanical knowledge from Kaukhali proper and Betunia of Rangamati district. *Bangladesh J. Plant Taxon.* 13(1): 55-61.

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