ISSN NO. 2320-5407

Journal homepage: http://www.journalijar.com
Journal DOI: 10.21474/IJAR01

INTERNATIONAL JOURNAL OF ADVANCED RESEARCH

RESEARCH ARTICLE

INDIGENOUS MEDICINAL PLANTS USED BY THE LOCAL PEOPLE AT SADAR UPAZILA OF NAOGAON DISTRICT, BANGLADESH

Jesmin Nahar, Smriti Kona, Rony Rani, *A.H.M. Mahbubur Rahman and A.K.M. Rafiul Islam
Plant Taxonomy Laboratory, Department of Botany, Faculty of Life and Earth Sciences, University of Rajshahi, Rajshahi-6205, Bangladesh

Manuscript Info

Manuscript History:

Received: 11 April 2016
Final Accepted: 13 May 2016
Published Online: June 2016

Key words:
Medicinal plants, Indigenous uses, Herbal medicine, Naogaon sadar, Bangladesh

Corresponding Author

A.H.M. Mahbubur Rahman

Abstract

Indigenous medicinal plants were conducted during July 2013 to June 2015 in sadar upazila of Naogaon district, Bangladesh. The objective of the study was to document medicinal plant species of the study area and associated indigenous knowledge. A total of 84 plant species belonging to 76 genera and 45 families were collected which are used for the treatment of 55 categories of diseases. Many plants are used by them for the treatment of various diseases like asthma, abscess, constipation, cough, fever, diarrhoea, dysentery, diuretic, diabetes, eczema, itches, jaundice, skin disease, vomiting, wound and worm. A number of scientific investigations have highlighted the importance and the contribution of many plant families i.e. Acanthaceae, Amaranthaceae, Anacardiaceae, Apiaceae, Asteraceae, Apocynaceae, Arecaceae, Combretaceae, Cucurbitaceae, Euphorbiaceae, Fabaceae, Liliaceae, Lamiaceae, Moraceae, Rutaceae, Solanaceae used as medicinal plants. Medicinal plants play a vital role for the development of new drugs. The recorded information depicts that local people largely depend on medicinal plants to meet their primary health care.

Introduction:-

The medicinal properties of plant species have made an outstanding contribution in the origin and evolution of many traditional herbal therapies. These traditional knowledge systems have started to disappear with the passage of time due to scarcity of written documents and relatively low income in these traditions. Over the past few years, however, the medicinal plants have regained a wide recognition due to an escalating faith in herbal medicine in view of its lesser side effects compared to allopathic medicine in addition the necessity of meeting the requirements of medicine for an increasing human population. Every plant contains a large number of different groups of chemical compounds, some of which have been observed to have healing effects. In the course of evolution, methods were discovered for processing medicinal plants and using their active compounds. The use of medicinal plants can be historically divided into at least three different but overlapping philosophies and forms of application. Forests have played key roles in the lives of people living in both mountains and lowland areas by supplying forest water and oxygen as well as providing a diversity of valuable forests products for food and medicine. The age old traditional values attached with the various forest types and the varieties of forest products (i.e. medicinal plants) have gained tremendous importance in the present century. Plants play a leading role in the introduction of novel therapeutic agents, and also drugs from the higher plants carry on dwelling in an important position in modern medicine (Dev, 1997; Byers et al 2001; Fausayara et al 2015; Iswarndi et al 2015).

Bangladesh has very rich in Bio-diversity. It has more than 500 medicinal plants species (Ghani, 2003). Over the past two decades several medicinal and ethno-botanical 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, 1975); Khan et al (2015); 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 (2001, 2004, 2006, 2008, 2012, 2014). In this present research article was to reported about local uses of plants collected from traditional practitioners to cure different diseases at sadar upazila of Naogaon district, Bangladesh.

Materials and Methods:-

The field study was carried out at sadar upazila of Naogaon district from July 2013 to June 2015. In the present survey, a total of 84 plant species belonging to 76 genera and 45 families were recorded. A total of twenty three field trips were made for documentation. During the field interview, the information was noted in the documentation data sheet. One hundred and twenty five (75 male and 50 female) persons were interviewed. Among the interviewees, 15% were age of 19-39 years, 55% were age of 39-55 years and 30% were 56-70 years old. All the information regarding plant species, biological forms, habitat, local names and uses was documented. Medicinal information was obtained through informal interviews following semi-structured from knowledgeable person's particularly local Kabiraj/Herbalists and elderly people. Plant specimens were collected with flowers and fruits and processed using standard herbarium techniques (Alexiades, 1996). The specimens were identified consulting with the experts, by comparing herbarium specimens and available literatures such as Ahmed et al (2008-2009); Aicha et al (2016); Adesina et al (2015); Boubakr et al (2015); Hooker (1961); Kechar et al (2015); Kheira et al (2015); Kirtikar and Basu (1987); Mahmoud et al (2015); Prain, (1963); Rahman (2013d, 2013g) and Saidi et al (2015). The voucher specimens are stored at the Herbarium, Department of Botany, Rajshahi University for future reference.

Results and Discussion:-

In the present investigation, a total of 84 plant species belonging 76 genera and 45 families were reported to be used as medicine (Table 1). Out of these plants species, 26 belonged to herbs, 31 trees, 18 shrubs, and 9 climbers. For each species scientific name, local name, family, habit, mode of uses and part(s) used are provided. Use of plant parts as medicine shows variation (Table 1). Leaves (51.76%) are the leading part used in a majority of medicinal plants followed by 26.19% root, 27.38% fruit, 1.19% rhizome, 9.52% whole plant, 14.28% bark, 5.95% stem, 7.14% seed, 1.19% sap, 2.38% bulb, 1.19% tuber, flower 1.19% and 4.76% latex (Figure 3). Distribution of medicinal plant species in the families shows variation. Each of Euphorbiaceae and Fabaceae is represented by 6 species. The family Rutaceae is represented by 5 species. Each of Apocynaceae and Arecaceae is represented by 4 species. A single species in each was recorded by 27 families while 2 to 3 species in each was recorded by 13 families (Table 1). Euphorbiaceae, Fabaceae, Rutaceae, Apocynaceae and Arecaceae were dominant families in the study area (Figure 2). The most cited medicinal plant families were Acanthaceae, Araceae, Arecaceae, Apiaceae, Amaranthaceae, Annonaceae, Apocynaceae, Asteraceae, Combretaceae, Cucurbitaceae, Euhorbiaceae, Fabaceae, Lamiaceae, Liliaceae, Menispermaceae, Moraceae, Myrtaceae, Rutaceae, Solanaceae and Zingiberaceae. The most frequently used species for the treatment of different diseases are *Achyranthes aspera, Aegle marmelos, Aloe vera, Allium sativum, Alstonia scholaris, Alocasia indica, Andrographis paniculata, Artocarpus heterophyllus, Asparagus racemosus, Azadirachta indica, Bombax ceiba, Centella asiatica, Erythrina variegata, Eclipta alba, Ficus racemosa, Justicia adhatoda, Justicia gendarussa, Kalanchoe pinnata, Lawsonia inermis, Moringa oleifera, Mimosa pudica, Momordica charantia, Ocimum sanctum, Phyllanthus emblica, Rauvolfia serpentina, Senna alata, Scoparia dulcis, Stephania japonica, Tamarindus indica, Terminalia chebula, Terminalia arjuna, Vitex negundo* and *Zizyphus mauritiana*. The reported plant species were used to treat 55 different ailments/diseases. The most often cited diseases were: diarrhoea, dysentery, fever, cough, abscess, asthma, rheumatism, diuretic, vomiting, blood pressure, heart disease, sex problems, skin diseases, piles, anemia, diabetes, toothache, headache, menstrual disease, ulcers, wound and worm. Moreover, out of 84 plant species, 12 species used for dysentery, 9 species for diarrhea, 16 for fever, 4 for cold, 5 for cough, 6 for asthma, 7 for diuretic, 4 for heart disease, 6 for vomiting, 3 for fracture, 5 for rheumatism, 7 for wound and 9 for worms. Among the medicinal plants, trees 31 (36.90%) were most frequently used followed by herbs 26 (30.95%), shrubs 18 (21.42%) and climber 9 (10.71%) (Figure 1). The similar workers are investigated by like Anisuzzaman et al (2007); Chowdhury and Rahamatullah (2012); Ghani (2003); Halim et al (2014); Khan et al (2015); Khan (1998, 1975); Yahia (2014) and Yusuf et al (2006).

Table 1:- Indigenous medicinal plants used by the local people at sadar upazila of Naogaon district, Bangladesh

S/N	Family name	Botanical name	Local name	Habit	Parts used	Ailments and mode of uses
1	Acanthaceae	*Andrographis paniculata* (Burm.f.) Wall ex Nees.	Kalo megh	Herb	Leaf, whole plant	Paste of leaves is used in wound and itches. Juice made from whole plants is used in dysentery, diarrhoea and fever. Juice of leaves mixed with salt and water used in helminthiasis.
2	Acanthaceae	*Justicia adhatoda* L.	Basak	Shrub	Leaf, bark	Juice made from young leaves is used in asthma and cough. Juice made from bark and leaves are used in vomiting and worm.
3	Acanthaceae	*Justicia gendarussa* Burm. f.	Jagath madan	Shrub	Leaf	Juice made from leaves is used in asthma. Paste made from leaves is used in fracture, itches and wound.
4	Aloeaceae	*Aloe vera* L.	Ghrita kumari	Herb	Leaf	It leaf mucilage is used in piles. Juice made from leaves is used in menstrual disease and sexual problems. Extract prepared from boiled leaf is taken to treat paralysis.
5	Amaranthaceae	*Achyranthes aspera* L.	Apang	Herb	Leaf, root	Juice of roots is used in abortion and diuretic. Paste of leaves is used in eczema. Root chewed daily to relief Toothache. Root extract is used in dental carriage.
6	Amaranthaceae	*Amaranthus spinosus* L.	Kanta notey	Herb	Whole plant, root	Juice made from whole plant is used in asthma and fever. Extract prepared from root is taken two to three tea spoonfuls twice daily until cured to treat the pregnant woman in diarrhoea.
7	Anacardiaceae	*Lannea coromandilica* (Houtt.) Merr.	Jiga	Tree	Bark, leaf	Decoction of the bark is used for toothache. Boiled leaves are applied as a fomentation for local swelling and pains.
8	Anacardiaceae	*Mangifera indica* L.	Am	Tree	Leaf	Decoction of young leaves is used in toothache.
9	Anacardiaceae	*Spondius pinnata* (L. f.) Kurz.	Deshi amra	Tree	Fruit	The unripe fruit is good for rheumatism and sore throat. Ripe fruit is tonic, aphrodisiac and astringent to the bowels; cures burning sensation.
10	Annonaceae	*Annona squamosa* L.	Ata	Tree	Leaf, root	Pastes of leaves are used in abscess. Juice of roots is used in dysentery.
11	Apiaceae	*Centella asiatica* (L.) Urban	Thankuni	Herb	Whole plant, leaf	Vegetable of whole plants is used in dysentery. Paste made from young leaves is used in eczema and headache.
12	Apocynaceae	*Alstonia scholaris* (L.) R. Br.	Chatim	Tree	Bark	Juice made from bark is used in dysentery and fever. Paste of bark is also applied to affected areas in insect bite.
13	Apocynaceae	*Catharanthus roseus* (L.) G. Don.	Nayan tara	Herb	Root	Decoction of the root is used as stomachic and tonic.
14	Apocynaceae	*Rauvolfia*	Sarpa	Herb	Root	Juice made from roots is used in blood

		serpentina (L.) Benth ex Kurz.	gandha			pressure and heart disease. Decoction of roots is used in dysentery and diarrhoea.
15	Apocynaceae	*Thevetia peruviana* (Pers.) K. Schum.	Holde korobi	Shrub	Bark, seed	Barks and seeds are cardiac tonic and strong cardiac stimulant.
16	Araceae	*Alocasia indica* Roxb.	Man kochu	Herb	Whole plant	Whole plant is used as vegetable. Curry prepared from the whole plant is taken every day those are suffering from habitual constipation, anal inflammation and rheumatism.
17	Araceae	*Colocasia esculenta* (L.) Schott.	Kochu	Herb	Leaf, tuber	Curry made from leaves and bulb is used as constipation, colic, digestive.
18	Arecaceae	*Areca catechu* L.	Supari	Tree	Root, seed	Decoction of the roots is a reputed cure for sore lips. Seeds are used as astringent, diuretic, urinary disorder and diarrhoea.
19	Arecaceae	*Borassus flabellifer* L.	Taal	Tree	Fruit	Pulp of unripe fruit is used in diuretic.
20	Arecaceae	Cocos nucifera L.	Narikel	Tree	Fruit, root	Juice of roots is used in diuretic and menstrual disease. Green coconut water is commonly used as dehydrating agent in diarrhoea.
21	Arecaceae	*Phoenix sylvestris* (L.) Roxb.	Khejur	Tree	Sap, root	Sap of the plant is nutritious, cooling and laxative. Central tender part is useful in gonorrhoea and gleets. Root is used in toothache and in nervous debility.
22	Asclepiadaceae	*Calotropis procera* R. Br.	Akanda	Shrub	Leaf	Extract of leaves is used in piles.
23	Asteraceae	*Eclipta alba* (L.) Hassk.	Kalo keshi	Herb	Leaf	Paste made from young leaves is used in wound and skin disease.
24	Asteraceae	*Vernonia patula* (Dryand.) Merr.	Kuksim	Herb	Flower	Pastes made from flower heads are used as ulcers, wounds and dropsy.
25	Averrhoaceae	*Averrhoa carambola* L.	Kam ranga	Tree	Fruit	Fruits are used in fever and jaundice. Fruit is also eaten a good remedy for bleeding piles.
26	Bombacaceae	*Bombax ceiba* L.	Shimul	Tree	Bark, root	Juice made from barks is used in dysentery and excessive menstrual discharge. Juice made from immature plant roots are used in diabetes and sexual problems.
27	Boraginaceae	*Heliotropium indicum* L.	Hatisur	Herb	Leaf	Decoction of leaves is used in fever. Paste made from leaves is used in skin disease.
28	Bromeliaceae	*Ananas comosus* (L.) Merr.	Anaros	Herb	Fruit	Juice of unripe fruit is used in abortion. Ripe fruit is used cough, diuretic, fever, helminthiasis and worm.
29	Caricaceae	*Carica papaya* L.	Papaya	Shrub	Fruit, latex	Fruit juice is used in constipation. Latex is used in itches. Ripe fruits are

						used in indigestion, liver disease and diarrhoea.
30	Combretaceae	*Terminalia arjuna* (Roxb. Ex DC) Wight & Arn.	Arjun	Tree	Leaf, bark, fruit	Leaf soaked in water over night in burning sensation. Juice made from bark mixed with water used in blood pressure. Dust made from dry shoot bark mixed with water used in heart disease. Unripe fruits are used in worm.
31	Combretaceae	*Terminalia bellirica* (Gaertn.) Roxb.	Bohera	Tree	Fruit, seed	Fruits are used in burning sensation. The oil extracted from the seeds is used in rheumatism.
32	Combretaceae	*Terminalia chebula* Retz.	Horitaki	Tree	Fruit,	Ripe fruits are used in constipation and indigestion. Unripe fruits are used in rheumatism and urinary disease.
33	Crassulaceae	*Kalanchoe pinnata* (Lamk.) Pers.	Pathar kuchi	Herb	Leaf	Juice made from young leaves is used in cough, dysentery, diuretic and diabetes. Paste of leaves is used in fracture.
34	Cucurbitaceae	*Coccinia cordifolia* (L.) Cogn.	Telakucha	Climber	Leaf	Vegetable made from young leaves is used in diabetes and fever.
35	Cucurbitaceae	*Momordica charantia* L.	Korola	Climber	Fruit, leaf	Juice made from leaves is used in chickenpox and rheumatism. Curry made from unripe fruit is used as diabetes.
36	Cuscutaceae	*Cuscuta reflexa* Roxb.	Sarnalata	Climber	Whole plant	Decoction of whole plant is used in liver disease.
37	Euphorbiaceae	*Acalypha indica* L.	Mukta jhuri	Herb	Leaf	Fresh leaf juice is used in skin disease.
38	Euphorbiaceae	*Jatropha gossypifolia* L.	Lal verenda	Shrub	Leaf	Warmed leaf applied to the affected areas for the treatment of pain in hand or leg.
39	Euphorbiaceae	*Jatropha curcas* L.	Jamal gota	Shrub	Latex	Latex of stem is applied in mouth three to five days to treat lip blister.
40	Euphorbiaceae	*Phyllanthus emblica* L.	Amloki	Tree	Fruit	Ripe fruits are used in burning sensation, vomiting, cough and indigestion. Dried fruits are used in jaundice.
41	Euphorbiaceae	*Phyllanthus reticulatus* Poir.	Sitki	Shrub	Leaf	The leaves are employed as a diuretic and cooling medicine. Juice of the leaves is used in diarrhoea of infants.
42	Euphorbiaceae	*Ricinus communis* L.	Redri	Shurb	Seed, leaf	The oil extracted from the seeds is used in rheumatism. Paste made from leaves is used in headache.
43	Fabaceae	*Abrus precatorius* L.	Kuch	Climber	Seed, root	Paste made from seeds is used in paralysis. Decoction of roots is used as diuretic, fever and bronchitis.
44	Fabaceae	*Cajanus cajan* (L.) Millsp.	Arhar	Shrub	Leaf, root	Decoction of leaves is used in cattle dyspepsia. Juice made from roots is used in diabetes. Juice made from young leaves is used in jaundice.
45	Fabaceae	*Erythrina*	Madar	Tree	Bark,	Juice of bark is used in fever. Juice

		variegata L.			root, leaf	made from roots are used the flow of menstrual period when this is absent. Juice made from leaves is used in toothache.
46	Fabaceae	*Mimosa pudica* L.	Lajjaboti	Climber	Root	Decoction of roots is used in fever. Juice of root is used in snake-bite.
47	Fabaceae	*Senna sophera* (L.) Roxb.	Kolka sundha	Herb	Leaf, root	Decoction of leaves and roots are used in dyspepsia.
48	Fabaceae	*Tamarindus indica* L.	Tetul	Tree	Fruit, leaf	Ripe fruit pulps are used in burning sensation. Juice of leaves is used in heart disease.
49	Lamiaceae	*Vitex negundo* L.	Nishinda	Shrub	Leaf, root	Juice of roots is used in fever. Paste of leaves is used in rheumatism.
50	Lamiaceae	*Leucas aspera* (Willd.) Link.	Setodron	Herb	Leaf	Juice made from young leaves is used in fever and worm.
51	Lamiaceae	*Ocimum sanctum* L.	Tulsi	Herb	Leaf	Juice made from young leaves is used in cough. Juice of roots is used in fever.
52	Liliaceae	*Allium cepa* L.	Piaj	Herb	Bulb	Juice of bulb/scales is used in cough and headache.
53	Liliaceae	*Allium sativum* L.	Rashun	Herb	Bulb	Bulb is used in piles. Juice of bulb is used in rheumatism. Boiled garlic is taken to remove gas formation and stomach pain. Garlic is also taken with hot rice to treat high blood pressure.
54	Liliaceae	*Asparagus racemosus* L.	Satamuli	Climber	Root, whole plant	Juice made from the tuberous roots is used in diarrhoea, diabetes and jaundice. Juice of whole plant used in urinary disease.
55	Lythraceae	*Lawsonia inermis* L.	Mehedi	Shrub	Leaf	Paste made from leaves is used in wound and burning sensation.
56	Malvaceae	*Hibiscus rosa-sinensis* L.	Joba	Shrub	Flower	Juice of the flower with juice of banana inflorescence cures acute dysentery. Paste made from flower is used as hair disease.
57	Meliaceae	*Azadirachta indica* A. Juss.	Neem	Tree	Leaf	Juice made from young leaves mixed with water of boil rice used in worm. Leaves are used in chickenpox. Paste of leaves is used in eczema and itches. Juice made from young leaves mixed with salt and water used in helminthiasis.
58	Menispermaceae	*Stephania japonica* (Thunb.) Miers.	Akar nandi	Climber	Root, leaf	Both of root and leaves juice is used as astringent, fever, diarrhoea, dyspepsia and dysentery. Pastes made from leaves are used as abscess and vertigo.
59	Menispermaceae	*Tinospora cordifolia* (Willd.) Hook f. & Thomson	Gulancha	Climber	Whole plant, stem	Juice made from stem and whole plants are used as stomachic, tonic, fever, and skin disease heart disease, jaundice, burning sensation, colic, dropsy and rheumatism.
60	Moraceae	*Artocarpus heterophyllus* Lamk.	Kathal	Tree	Leaf, root, bark	Juice made from young leaves is used in asthma and itches. Juice made from young roots is used in diarrhoea. Juice made from bark is used in excessive

						menstrual discharge.
61	Moraceae	*Ficus benghalensis* L.	Bot	Tree	Leaf	Leaves are useful applied as poultice in abscess.
62	Moraceae	*Ficus racemosa* L.	Joga dumur	Tree	Fruit, latex	Latex is used in piles. Curry made from unripe fruit is used as diabetes.
63	Moringaceae	*Moringa oleifera* Lamk.	Sajna	Tree	Fruit, root	Fruits are used in chickenpox and paralysis. Decoction of roots is used in fever.
64	Musaceae	*Musa paradisiaca* L.	Kola	Shrub	Stem	Sap of the central cylindrical stem of the fruited plants is used in blood pressure.
65	Myrtaceae	*Psidium guajava* L.	Piyara	Tree	Stem, leaf, fruit	Juice made from the stem bark is used in blood dysentery. Fruits are used in diarrhoea. Decoction of leaves is used in toothache. Young fruits are used in worm.
66	Myrtaceae	*Syzygium cumini* (L.) Skeels.	Kalojam	Tree	Bark, seed	Paste made from the bark is used in dysentery and wound. Dry seed dust mixed with normal water used in diabetes.
67	Oxalidaceae	*Oxalis corniculata* L.	Amrul	Herb	Leaf	Juice made from leaves is used in anaemia. Vegetable made from young leaves are used in cough.
68	Papaveraceae	*Argemone mexicana* L.	Sialkanta	Herb	Root, stem, latex	Juice made from roots is used in diuretic. Curry made from of stems is used in diabetes and jaundice. Latex is used in itches and skin disease.
69	Poaceae	*Cynodon dactylon* (L.) Pers.	Durba ghas	Herb	Leaf, whole plant	Paste made from young leaves is used in skin disease. Paste made from whole plant is used in stop bleeding and wound.
70	Punicaceae	*Punica granatum* L.	Dalim	Tree	Fruit	Juice of fruits is used in anaemia. Immature fruit juice is used in dysentery. Ripe fruits are used in diarrhoea.
71	Rhamnaceae	*Zizyphus mauritiana* Lamk.	Boroi	Tree	Leaf	Paste made from young leaves is used in headache.
72	Rubiaceae	*Anthocephalus chinensis* L.	Kadam	Tree	Bark, leaf	Bark is used in the treatment of snake-bite. Decoction of the leaf is used as stomachic.
73	Rutaceae	*Aegle marmelos* (L.) Correa	Bel	Tree	Leaf, fruit	Juice of young leaves is used in abscess and fever. Decoction of immature fruits is used in baby's dysentery. Ripe fruits are used in indigestion. Juice prepared from fruit is taken one glass instantly to treat vomiting.
74	Rutaceae	*Citrus aurantifolia* (Christm.) Swingle	Lebu	Shrub	Fruit, Leaf	Juice prepared from fruit, mixed with salt is taken as a remedy for stomach pain. Leaf paste applied to forehead during headache.
75	Rutaceae	*Citrus grandis* (L.) Osb.	Jambura	Tree	Fruit	Juice made from ripe fruit is used in anaemia.

76	Rutaceae	*Feronia limonia* (L.) Swingle	Kothbel	Tree	Fruit, leaf	Juice made from leaves is used in vomiting. Fruit pulp is used in diuretic.
77	Rutaceae	*Glycosmis pentaphylla* Retz.) DC.	Atishora	Shrub	Fruit, leaf	Juice of ripe fruit is used in dysentery. Juice of leaves is used in jaundice.
78	Scrophulariaceae	*Scoparia dulcis* L.	Talmisri	Herb	Root	Juice made from roots is used in snake-bite.
79	Solanaceae	*Datura metel* L	Dutra	Herb	Leaf	Cigarette made from it leaves are smoked in asthma. Pastes made from leaves are used in rheumatism.
80	Solanaceae	*Solanum nigrum* L.	Kak machi	Herb	Fruit	Juice made from green fruits is used in diuretic and heart disease.
81	Sterculiaceae	*Abroma augusta* L.	Ulot kambol	Shrub	Bark, leaf	Paste prepared from sticky bark and leaves is applied to affected areas for treatment of snake bite.
82	Verbenaceae	*Clerodendrum viscosum* Vent.	Bhat	Shrub	Leaf	Juices made from leaves are used in vomiting, worm and dyspepsia.
83	Vitaceae	*Cissus quadrangularis* L.	Harjora	Climber	Stem	Paste made from the stem barks are used in bone fracture.
84	Zingiberaceae	*Curcuma longa* L.	Holud	Herb	Rhizome	Rhizome is properly used in abscess. Paste made from rhizome is used in eczema.

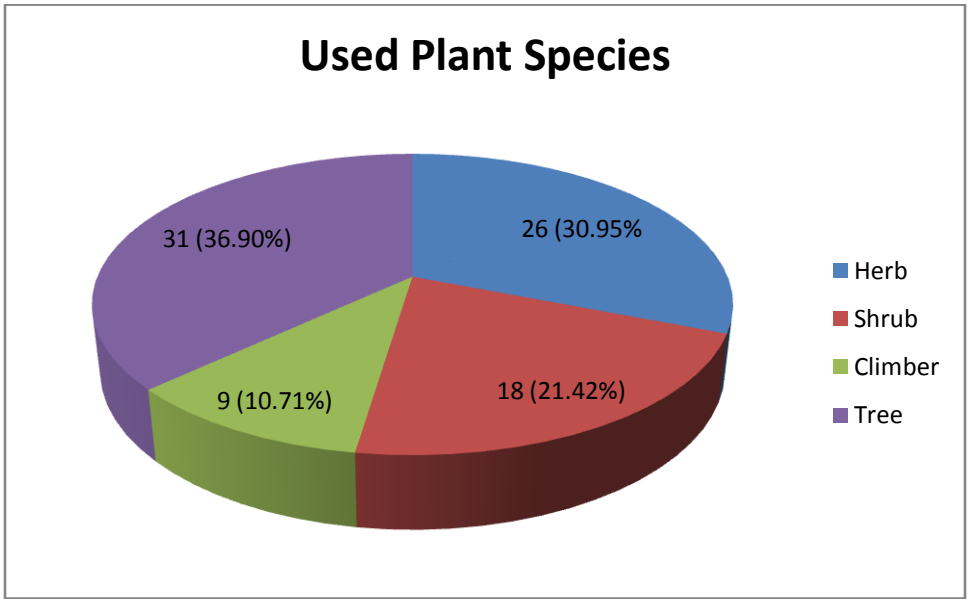

Figure 1:- Habit analyses of used plant species in the study area.

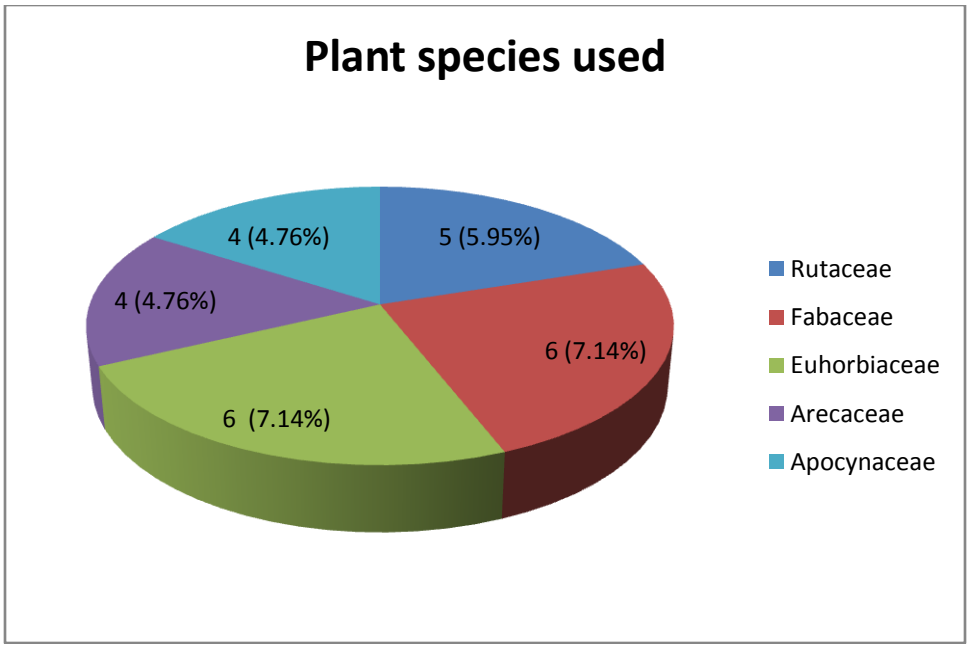

Figure 2:- Dominant plant families are showed in the study area.

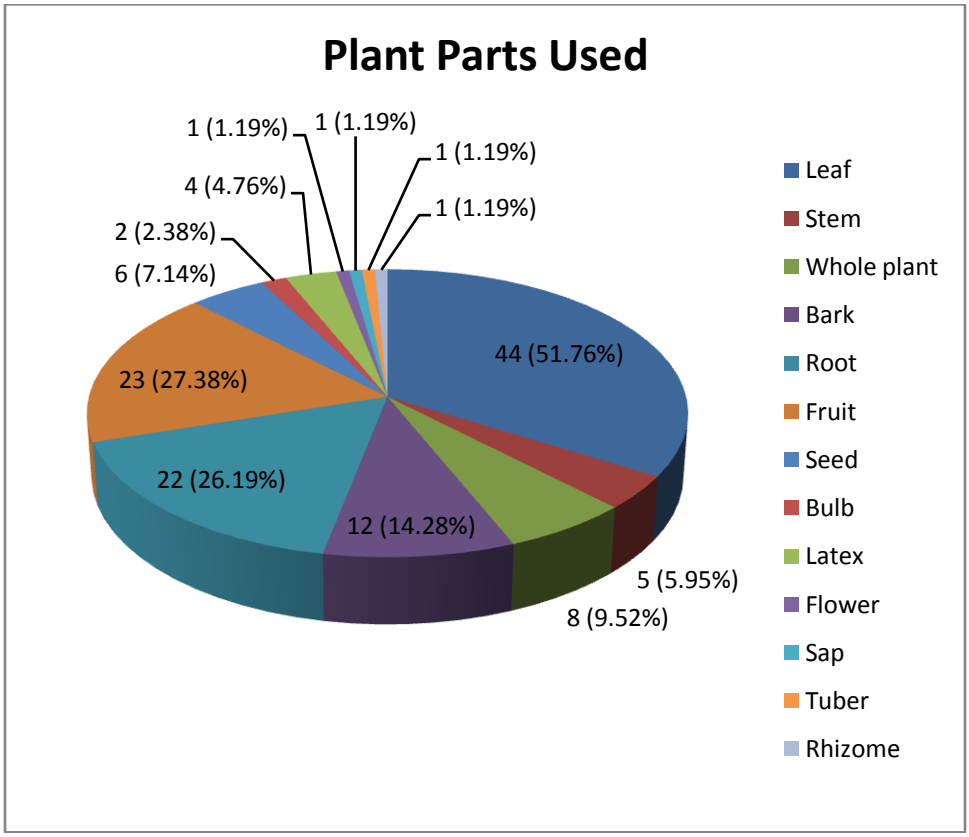

Figure 3:- Plant parts are used different diseases.

PHOTOGRAPHS OF IMPORTANT MEDICINAL PLANTS:-


Terminalia chebula


Terminalia belerica


Momordica charantia


Jatropha gossypifolia


Jatropha curcas


Abrus precatorius


Leucas aspera


Lawsonia inermis


Azadirachta indica


Tinospora cordifolia


Syzygium cumini


Citrus aurantifolia


Glycosmis pentahylla


Scoparia dulcis


Abroma augusta


Argemone mexicana


Artocarpus heterophyllus


Stephania japonica


Erythrina variegata


Cajanus cajan

Conclusion:-

Medicinal plants as potential source of therapeutic aids have attained a significant role in health system all over the world for both humans and animals not only in the diseased condition but also as potential material for maintaining proper health. The indigenous knowledge of drug preparation and administration was documented. The drugs are obtained from leaves, flowers, roots, stems, whole plant, seed, bulb, sap, tuber, fruit, latex, bark and rhizome. Therefore, these scientific investigations may be utilized to develop herbal drugs for these diseases and improved health status.

Acknowledgements:-

The authors are grateful to the local people at sadar upazila of Naogaon district, Bangladesh for their co-operation and help during the medicinal studies.

References:-

1. Ahmed, Z. U., Begum, Z. N. T., Hassan, M. A., Khondker, M., Kabir, S. M. H., Ahmad, M., Ahmed, A. T. A., Rahman, A. K. A. and Haque, E. U.(Eds). (2008-2009): Encyclopedia of Flora and Fauna of Bangladesh. 6-10.Angiosperms; Asiat. Soc. Bangladesh, Dhaka.
2. Adesina, G.O., Adelasoye, K.A. and Ogunmokun, F.A. (2015): Survey of earthen fish ponds for aquatic weed problems in selected states of Southwestern Nigeria. American-Eurasian Journal of Sustainable Agriculture. 9(5): 7-13.
3. Aicha, M.B., Abderrahim, Z.S., Fouzia, T.B., Mahmoud, D.I.F.M. and Laid, H. (2016): Inventory of the adventitious flora in a cereal agro-system in the plain of Tessala (Western Algeria). Global Journal of Biodiversity Science and Management. 6(1): 1-13.
4. Alam, M.K. (1992): Medical ethno-botany of the Marma tribe of Bangladesh. Economic Botany. 46(3): 330-335.
5. Alam, M.K., Choudhury, J. and Hassan, M.A. (1996): Some folk formularies from Bangladesh. Bangladesh J. Life Sci. 8(1): 49-63.
6. Alexiades, M.N. (Ed). (1996): Selected Guidelines for Ethno Botanical Research: A Field Manual. The New York Botanical Garden, New York.
7. Anisuzzaman, M., Rahman, A.H.M.M., Rashid, M.H., Naderuzzaman, A.T.M. and Islam, A.K.M.R. (2007): An Ethnobotanical Study of Madhupur, Tangail, Journal of Applied Sciences Research. 3(7): 519-530.
8. Boubakr, S., Ali, L., Mahmoud, D.I.F.M. and Zahra, H. (2015): Phytoecological and Phytogeographical Study on Asteraceae family of Tessala Mount (Western Algeria). Global Journal of Biodiversity Science and Management. 5(1): 1-9.
9. Byers, B.A., Cunliffe, R.N. and Hudak, A.T. (2001): Linking the conservation of culture and nature: a case study of sacred forests in Zimbabwe. Human Ecology. 29: 187-218.
10. Chakma, S., Hossain, M.K., Khan, B.M. and Kabir, M.A. (2003): Ethno-botanical knowledge of Chakma community in the use of medicinal plants in Chittagong Hill Tracts, Bangladesh. MFP News XIII. (3): 3-7.
11. Choudhury, A.R. and Rahmatullah, M. (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.
12. Dev, S. (1997): Ethno-therapeutic and modern drugdevelopment: The Potential of Ayurveda. Curr. Sci. 73(11): 909-928
13. Faruque, M.O. and Uddin, S.B. (2014): Ethnomedicinal study of the Marma community of Bandarban district of Bangladesh. Academia Journal of Medicinal Plants. 2(2): 014-025.
14. Fausayana, I., Sirajuddin, S.N., Salman, D., Saleh, M., Ali, S. and Darma, R. (2015): Habitus of Ethnic Bajo Bungin. American-Eurasian Journal of Sustainable Agriculture. 9(3): 1-9.
15. Ghani, A. (2003): Medicinal Plants of Bangladesh. Asiatic Society of Bangladesh, Dhaka.
16. Halim, M.A., Chowdhury, MSH, Wadud, A.I., Uddin, M.S., Sarker, S.K., Uddin, M.B. (2007): The use of plants in traditional health care practice of the Shaiji community in Southeastern Bangladesh. Journal of Troical Forest Science. 19: 168-175.
17. Hooker, J. D. (1961): Flora of British India. Vols.1-7. L. Reeve and Co. Ltd. London, U.K.
18. Isrer, T., Farhana, A.R., Borhan, U.B., Hossain, K.M., Khondokar, J., Malek, I., Bashar, A.B.M.A. and Rahamatullah, M. (2015): Indigenous medicinal Practices: medicinal plants of Chakma tribal medicinal practitioners in Rangamati district. American-Eurasian Journal of Sustainable Agriculture. 9(5): 28-35.
19. Iswandi, R.M., Basri, L.O.A., Adijaya, S., Alwi, L.O. and Arif, K. (2015): Empowerment of Remote Indigenous Community. American-Eurasian Journal of Sustainable Agriculture. 9(7): 1-6.
20. Kechar, K., Hellal, B. and Saidi, B. (2015): Microstructure and phytochemical Screening of different Organs of the Medicinal Plant Ballota hirsute Benth in the Tessala Mountains (Western Algeria). Global Journal of Medicinal Plants Research. 3(5): 17-20.
21. Khan, S., Tumpa, M., Toreq-ul-Zaman, M., Akter, S., Rahman, M.R., Islam, A., Rana, M., Jahan, S., Islam, M.A. and Rahmatullah, M. (2015): Folk Medicinal Practices among Tea Estate Workers: A Study in Moulvibazar District, Bangladesh. American-Eurasian Journal of Sustainable Agriculture. 9(1): 1-8.

22. 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. 24-27.
23. Khan, M.S. and Huq, A.M. (1975): Medicinal Plants of Bangladesh, BARC, Dhaka, Bangladesh.
24. Kheira, K., Benchaben, H. and Boubakr, S. (2015): Seasonal Quantification of Tannins of the Medicinal Plant Ballota hirsute Benth in the Tessala Mountains (Western Algeria). Global Journal of Medicinal Plants Research. 3(4): 4-7.
25. Khisha, B. (1996): Chakma Talik Chikitsa. Herbal Medicine Centre Committee, Rajban Bihar, Rajbari, Rangamati. 1-136.
26. Kirtikar, K.R. and Basu, B.D. (1987): Indian Medicinal Plants. Vol. 1-4. Lalit Mohan Basu, Allahabad, Jayyed Press, New Delhi, India.
27. Mahmoud, D.I.F.M., Benchiha, H., Mehdadi, Z. and Toumi, F.B. (2015): Botanic and anatomic study of Papaver rheoas L. of Tessala (Algeria, NW). Global Journal of Medicinal Plants Research. 3(1): 1-4.
28. Malek, I., Miah, M.R., Khan, M.F., Awal, R.B.F., Nahar, N., Khan, I., Chowdhury, S. and Rahmatullah, M. (2014a): Medicinal Plants of two practitioners in two Marma tribal communities of Khagrachhari district, Bangladesh, American-Eurasian Journal of Sustainable Agriculture. 8: 78-85.
29. Malek, I., Mia, N., Mustary, M.E., Hossain, M.J., Sathi, S.M., Parvez, M.J., Ahmed, M., Chakma, S., Islam, S., Billah, M.M. and Rahmatullah, M. (2014b): Medicinal Plants of the Chakma Community of Rangapanir Chara area of Khagrachhari district, Bangladesh. American-Eurasian Journal of Sustainable Agriculture. 8: 59-68.
30. Moonmoon, M., Islam, S.A., Bristy, S.T.J., Kader, M.B., Akter, S., Pk, S.K., Ahmed, S.T., Mosharaf, M.P., Mahal, M.J. and Rahmatullah, M. (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.
31. Nilima, M., Ive, F.M., Tonmoy, S., Kaosar, M., Suborna, B., Erena, I. and Rahmatullah, M. (2015): Medicinal Plants of a Folk Herbalist in Tangail District, Bangladesh. American-Eurasian Journal of Sustainable Agriculture. 9(4): 74-82.
32. Prain, D. (1963): Bengal Plants. Vols.1-2. Botanical Survey of India. Calcutta, India.
33. Rahman, A,H,M.M., Anisuzzaman, M., Ahmed, F., Islam, A.K.M.R. and Naderuzzaman, A.T.M. (2008a): Study of Nutritive Value and Medicinal Uses of Cultivated Cucurbits. Journal of Applied Sciences Research. 4(5): 555-558.
34. Rahman, A.H.M.M., Anisuzzaman, M., Haider, S.A., Ahmed, F., Islam, A.K.M.R. and Naderuzzaman, A.T.M. (2008b): Study of Medicinal Plants in the Graveyards of Rajshahi City. Research Journal of Agriculture and Biological Sciences. 4(1): 70-74.
35. Rahman, A.H.M.M., Kabir, E.Z.M.F., Sima, S.N., Sultana, R.S., Nasiruddin, M. and Naderuzzaman, A.T.M. (2010): Study of an Ethnobotany at the Village Dohanagar, Naogaon. Journal of Applied Sciences Research. 6(9): 1466-1473.
36. Rahman, A.H.M.M., Gulsan, J.E., Alam, M.S., Ahmad, S., Naderuzzaman, A.T.M. and Islam, A.K.M.R. (2012): An Ethnobotanical Portrait of a Village: Koikuri, Dinajpur with Reference to Medicinal Plants. International Journal of Biosciences. 2(7): 1-10.
37. Rahman, A.H.M.M. (2013a): Graveyards angiosperm diversity of Rajshahi city, Bangladesh with emphasis on medicinal plants, American Journal of Life Sciences. 1(3): 98-104.
38. Rahman, A.H.M.M. (2013b): An Ethno-botanical investigation on Asteraceae family at Rajshahi, Bangladesh. Academia Journal of Medicinal Plants. 1(5): 92-100.
39. Rahman, A.H.M.M. (2013c): Assessment of Angiosperm Weeds of Rajshahi, Bangladesh with emphasis on medicinal plants. Research in Plant Sciences. 1(3): 62-67.
40. Rahman, A.H.M.M. (2013d): A Checklist of Common Angiosperm Weeds of Rajshahi District, Bangladesh. International Journal ofAgricultural and Soil Science. 1(1): 1-6.
41. Rahman, A.H.M.M. (2013e): Ethno-medicinal investigation on ethnic community in the northern region of Bangladesh. American Journal of Life Sciences. 1(2): 77-81.
42. Rahman, A.H.M.M. (2013f): Ethno-botanical Survey of Traditional Medicine Practice for the Treatment of Cough, Diabetes, Diarrhea, Dysentery and Fever of Santals at Abdullahpur Village under Akkelpur Upazilla of Joypurhat District, Bangladesh. Biomedicine and Biotechnology. 1(2): 27-30.
43. Rahman, A.H.M.M. (2013g): Angiospermic flora of Rajshahi district, Bangladesh. American Journal of Life Sciences. 1(3): 105-112.
44. Rahman, A.H.M.M. (2013h): Ethno-medico-botanical investigation on cucurbits of the Rajshahi Division, Bangladesh. Journal of Medicinal Plants Studies. 1(3): 118-125.
45. Rahman, A.H.M.M. (2013i): Medico-botanical study of commonly used angiosperm weeds of Rajshahi, Bangladesh. Wudpecker Journal of Medicinal Plants. 2(3): 044-052.

46. Rahman, A.H.M.M. (2013j): Medico-botanical study of the plants found in the Rajshahi district of Bangladesh. Prudence Journal of Medicinal Plants Research. 1(1): 1-8.
47. Rahman, A.H.M.M. (2013k): Medico-Ethnobotany: A study on the tribal people of Rajshahi Division, Bangladesh. Peak Journal of Medicinal Plants Research. 1(1): 1-8.
48. Rahman, A.H.M.M. (2013l): 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.
49. Rahman, A.H.M.M and Akter, M. (2013): Taxonomy and Medicinal Uses of Euphorbiaceae (Spurge) Family of Rajshahi, Bangladesh. Research in Plant Sciences. 1(3): 74-80.
50. Rahman, A.H.M.M., Kabir, E.Z.M.F., Islam, A.K.M.R. and Zaman, A.T.M.N. (2013a): Medico-botanical investigation by the tribal people of Naogaon district, Bangladesh. Journal of Medicinal Plants Studies. 1(4): 136-147.
51. Rahman, A.H.M.M., Biswas, M.C., Islam, A.K.M.R. and Zaman, A.T.M.N. (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.
52. Rahman, A.H.M.M., Sultana, N., Islam, A.K.M.R. and Zaman, A.T.M.N. (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.
53. Rahman, A.H.M.M., Nitu, S.K., Ferdows, Z. and Islam, A.K.M.R. (2013d): Medico-botany on herbaceous plants of Rajshahi, Bangladesh. American Journal of Life Sciences. 1(3): 136-144.
54. Rahman, A.H.M.M. and Khanom, A. (2013): Taxonomic and Ethno-Medicinal Study of Species from Moraceae (Mulberry) Family in Bangladesh Flora. Research in Plant Sciences. 1(3): 53-57.
55. 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.
56. Rahman, A.H.M.M. (2014b): Ethno-medicinal Practices for the Treatment of Asthma, Diuretic, Jaundice, Piles, Rheumatism and Vomiting at the Village Abdullahpur under Akkelpur Upazilla of Joypurhat District, Bangladesh. International Journal of Engineering and Applied Sciences. 1(2): 4-8.
57. Rahman, A.H.M.M. and Gulshana, M.I.A. (2014): Taxonomy and Medicinal Uses on Amaranthaceae Family of Rajshahi, Bangladesh. Applied Ecology and Environmental Sciences. 2(2): 54-59.
58. Rahman, A.H.M.M. and Parvin, M.I.A. (2014): Study of Medicinal Uses on Fabaceae Family at Rajshahi, Bangladesh. Research in Plant Sciences. 2(1): 6-8.
59. Rahman, A.H.M.M. and Rahman, M.M. (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.
60. 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.
61. Rahman, A.H.M.M., Hossain, M.M. and Islam, A.K.M.R. (2014a): Taxonomy and Medicinal Uses of Angiosperm weeds in the wheat field of Rajshahi, Bangladesh. Frontiers of Biological and Life Sciences. 2(1): 8-11.
62. Rahman, A.H.M.M., Afsana, M.W. and Islam, A.K.M.R. (2014b): Taxonomy and Medicinal Uses on Acanthaceae Family of Rajshahi, Bangladesh, Journal of Applied Science And Research. 2(1): 82-93.
63. Rahman, A.H.M.M., Jahan-E-Gulsan, S.M. and Naderuzzaman, A.T.M. (2014c): Ethno-Gynecological Disorders of Folk Medicinal Plants Used by Santhals of Dinajpur District, Bangladesh. Frontiers of Biological & Life Sciences. 2(3): 62-66.
64. 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.
65. 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.
66. 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.
67. Rahman, A.H.M.M. and Debnath, A. (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.

68. Rahman, A.H.M.M. and Kumar, A.K. (2015): Investigation of Medicinal Plants at Katakhali Pouroshova of Rajshahi District, Bangladesh and their Conservation Management. Applied Ecology and Environmental Sciences. 3(6): 184-192.
69. Rahman, A.H.M.M. and Keya, M.A. (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.
70. Rahman, A.H.M.M., Akter, S., Rani, R. and Islam, A.K.M.R. (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.
71. Saidi, B., Ali, L., Zoheir, M., Zahra, H., Mohamed, D. and Boukeur, A. (2015): Floristic, Ethnobotanical and Phytotherapy Studies of Medicinal Plants Spontaneous in the Area of Mountains Tessala, Western Algeria. Global Journal of Medicinal Plants Research. 3(5): 1-16.
72. Uddin, K., Rahman, A.H.M.M. and Islam, A.K.M.R. (2014): Taxonomy and Traditional Medicine Practices of Polygonaceae (Smartweed) Family at Rajshahi, Bangladesh. International Journal of Advanced Research. 2(11): 459-469.
73. Uddin, M., Roy, S., Hassan, M.A. and Rahman, M.M. (2008): Medicobotanical report on the Chakma people of Bangladesh. Bangladesh J. Plant Taxon. 15(1): 67-72.
74. Uddin, M.Z., Hassan, M.A. and Sultana, M. (2006): Ethnobotanical survey of medicinal plants in Phulbari Upazilla of Dinajpur District, Bangladesh. Bangladesh J. Plant Taxon. 12(1): 63-68.
75. Uddin, M.Z., Hassan, M.A., Rahman, M. and Arefin, K. (2012): Ethno-medico-botanical study in Lawachara National Park, Bangladesh. Bangladesh J. Bot. 41(1): 97-104.
76. Uddin, M.Z., Khan, M.S. and Hassan, M.A. (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.
77. Uddin, S.N., Uddin, M.Z., Hassan, M.A. and Rahman, M.M. (2004): Preliminary ethno-medicinal plant survey in Khagrachhari district, Bangladesh. Bangladesh J. Plant Taxon. 11(2): 39-48.
78. Yahia, A.O. (2014): Local knowledge on trees utilization and their existing threats in Rashad District of Nuba Mountains, Sudan. Journal of Forest and Environmental Science. 30(4): 342-350.
79. Yusuf, M., Wahab, M.A., Choudhury, J.U. and Begum, J. (2006): Ethno-medico-botanical knowledge from Kaukhali proper and Betunia of Rangamati district. Bangladesh J. Plant Taxon. 13(1): 55-61.