

Full Length Research Paper

An ethnobotanical investigation on Asteraceae family at Rajshahi, Bangladesh

A H M Mahbubur Rahman

Department of Botany, University of Rajshahi, Rajshahi-6205, Bangladesh. E-mail: ahmmahbubur_rahman@yahoo.com

Accepted 2 April, 2013

An ethnobotanical study on Asteraceae family at Rajshahi, Bangladesh was made. Information gathered through structural questionnaire and interviews shows that the tribal and local people who mostly use different plant species for their diseases and ailments. In the present study 36 plant species 29 genera of the family Asteraceae have been recorded which are used by the local people in the ailment of human diseases and 18 species have been recorded which are used in the ailment of diseases of domestic animals. On the other hand 53 human diseases recorded by traditional medicine have been recorded. Among them very common diseases are wounds cured by 11 plant species, diuretic by 7 plant species, tonic by 6 plant species, bronchitis by 6 plant species, fever by 6 plant species, cough by 5 plant species, leprosy by 4 plant species, snake-bite by 4 plant species, ophthalmia by 4 plant species, skin disease by 4 plant species, piles by 4 plant species, asthma by 4 plant species, jaundice by 3 plant species, toothache by 3 plant species, earache by 3 plant species, burning sensation by 3 plant species, ulcers by 3 plant species, inflammations by 3 plant species, anthelmintic by 2 plant species, blood disease by 2 plant species, boils by 2 plant species, pulmonary affections by 2 plant species, gonorrhoea by 2 plant species, colds by 2 plant species and scabies by 2 plant species. It has also been observed that a single species is used in the ailment of one disease. It was observed that the availability of these plants are decreasing at an alarming rate. This observation also reveals that habitat destruction, over exploitation and unplanned agriculture were the reasons for depletion of medicinal plants. Therefore, the medicinal plants are used as traditional healthcare system need urgent conservation.

Key words: Ethnobotany, Medicinal Plants, Asteraceae, Rajshahi.

INTRODUCTION

Ethnobotany is the study of relationship between plants and people: From 'ethno'-study of people and 'botany'-study of plants. Ethnobotany is considered as a branch of ethnobiology. Ethnobotany studies the complex relationships between (uses of) plants and cultures. The focus of ethnobotany is on how plants have been or are used, managed and perceived in human societies and includes plants used for food, medicine, divination, cosmetics, dyeing, textiles, for building, tools, currency, clothing, rituals and social life (Rahman, 2009).

Ethnobotany, in its totality, is virtually an old field with new dimension of research. And if this field is investigated thoroughly and systematically, it will yield results of great value missing the ethnologists, archaeologists, anthropologists, plant-geographers, ethnobotanists, botanists and linguists and ultimately to pharmacologists and phytochemists. It will appear to be a bridge between botany and medicinal plants, but in fact it is much more. It

starts as step before ever botany in the sense supplies the 'idea' and the basic material for botanical research and study. It then takes us to the usefulness of medicinal plants. It goes a step further to help us in the application of the knowledge about the medicinal plants among the primitive people by rapport through the medicine men (Jain, 1996).

Bangladesh is very rich in ethnocultural heritage and traditional use of plant materials that may be of special interest in ethnobotanical informations. About 80 percent people of the country live in the villages and a considerable proportion is tribals living in remote forest areas (Ali, 1980).

During ethnobotanical field studies in the study area we came across a large number of "tribal and local people" who are using wild and semi-wild plants for medicine and other purposes. They are very experienced in traditional medicine and are actually prescribing these plants

materials to cure different diseases. The present paper is restricted to the medicinal uses of 36 such plants. The data were collected either from local medicine men or ordinary people who accompanied us in the field. This is first time ethnobotanical research on Asteraceae family in the study area. All data cannot be observed about this research. Aims of the study: A) To make an investigation about the present ethnobotanical status in the study area. B) Documentation of medicinal plants available in the study area. C) To know the extent of use of medicinal plants by the tribal and local people (Rahman, 2009).

MATERIALS AND METHODS

The present work is mainly based on information gathered from the interview with the "Tribal and local people" on the plants having economic importance to them. Relevant plants were collected from the study area, identified and preserved at the Herbarium of the Department of Botany, Rajshahi University.

The present investigation is divided into two parts:

Part-I. Interview with "Tribal and local people", collection, study, identification and preservation of plants: First step was interviewing the "Tribal and local people" about the plants they used in their daily life. These included the plants that have some economic importance as fruits, vegetables, furniture, drug, etc. Collections were made throughout the year and particular care was taken not to miss the flowering stages or the fruits. In all cases multiple sets of collections were made. During collection attempts were made to know the local names of the plants. All field data that cannot be observed from the herbarium specimen e.g. date, collection number, habitat, uses and distribution were recorded. Herbarium sheets were prepared in multiple sets and flowers were preserved in 70% alcohol for future study.

Publication of Agharkar (1991), Ahmed (2008), Alam (1992), Anisuzzaman (2007), Bhattachariya (1989), Biswas (1973), Dey (1996), Ghani (1988, 1998), Hassan (1988, 1993), Hooker (1877), Huq (1986, 1986), Koche *et al.* (2008), Khan (1975, 1998), Khan *et al.* (2002), Kirtikar (1987), Prain (1903) and Rahman (2008, 2009, 2010, 2011, 2012), Roy *et al.* (2008), Sing (1998-2001) were consulted for identification and information about medicinal uses of the taxa.

Part-II. Study of ethnobotanical aspects: For the present investigation interviews were taken from the "Tribal and local people" in the study area about different aspects, i.e. a) Holding numbers, b) Owner of the house, c) Family members and age groups d) Source of income, e) List of plants used by them, f) Purpose of use, g) How much amount they used, h) Method of use, i) From where they get the plants and j) Abundance of the plants.

RESULTS

Ethnobotanical data have been gathered on the traditional uses of plant species, especially for abscess, asthma, abortion, burning sensation, blood pressure, cough, chickenpox, constipation, dysentery, diarrhoea, diabetes, eczema, fever, fracture, headache, heart disease, itches, jaundice, menstrual disease, paralysis, skin disease, snake-bite, sex problem, tooth disease, vomiting, wound, worm and others.

By applying survey, interview, collection and identification methods, different ethnobotanical and ethnomedicinal information were accumulated. The check listed information about the plant materials collected from the study area are described as follows:

1. *Ageratum conyzoides* Linn.

Local name: Mukhra, Ochunti, Fulkuri

Habit: Annual herb.

Part used: Entire plant, leaf, stem, root.

Ethnobotanical uses: The entire plant is used as fuels. The plant is often used as a medicinal plant, and also it has bioactivity; for instance: insecticidal and nematocidal. The juice of the root is said to possess antilithic properties. The leaves and stems are also used in skin diseases, more particularly leprosy; and they are prescribed as a bath to patients with ecchymoses. The plant is used to counter stomach disorder. Also, an extract of the entire plant is taken as a tonic. The leaves applied to wounds act as a styptic and heal them quickly. An infusion is given in Brazil and Guiana as a stimulant tonic in diarrhoea and flatulent colic.

2. *Blumea lacera* (Burm. f.) DC.

Local name: Kukurmuta

Habit: Annual herb.

Part used: Leaf, root.

Ethnobotanical uses: The plant is used as fuels. The expressed juice of the leaves is used as an anthelmintic, febrifuge, astringent, and diuretic; mixed with black pepper, it is given in bleeding piles. The root mixed with black pepper is given in the treatment of cholera. Natives indicated use of the herb in bleeding piles.

3. *Blumea laciniata* (Roxb.) DC.

Local name: Kukurmuta

Habit: Annual herb.

Part used: Whole plant, root.

Ethnobotanical uses: The plant is hot, pungent, bitter; antipyretic; cures bronchitis, blood diseases, fevers, burning sensation, thirst. The root kept in the mouth cures diseases of the mouth. Dry plant is used as fuels.

4. *Callistephus chinensis* (Linn.) Nees.

Local name: Aster

Habit: Annual herb.

Part used: Root.

Ethnobotanical uses: Mainly used as ornamentals. The Chinese use the root for coughs and pulmonary affections, and in the treatment of malaria and haemorrhages.

5. *Calendula officinalis* Linn.

Local name: Calendula.

Habit: Annual herb.

Part used: Whole plant, flower.

Ethnobotanical uses: Mainly used as ornamentals. The plant, especially its flowers, was used on a large scale by the American surgeons to treat wounds and injuries sustained during the last civil war, and obtained their warmest commendation. It quite prevented all exhausting suppurative discharges and drainings. The plant is signally valued for healing wounds, ulcers, burns, and other breaches of the skin surface; it is a precious vulnerary.

6. *Caesulia axillaris* Roxb.

Local name: Golphuli

Habit: Annual herb.

Part used: Whole plant, leaf, root.

Ethnobotanical uses: Plant is used as fuels. The leaves applied to wounds act as a styptic and heal them quickly. The juice of the root is said to possess antilithic properties.

7. *Chrysanthemum coronarium* Linn.

Local name: Chandramollica.

Habit: Annual herb.

Part used: Bark, flower, leaf, root.

Ethnobotanical uses: Mainly used as ornamentals. The bark is purgative and is used in syphilis. The leaves are applied topically to lessen inflammation. The flowers are a tolerable substitute for chamomile. The root chewed communicates the same tingling sensation to the tongue as pellitory. The people of the Deccan administer the plant in conjunction with black pepper in gonorrhoea.

8. *Cosmos caudatus* Kunth.

Local name: Cosmos.

Habit: Annual herb.

Part used: Flower, leaf, stem.

Ethnobotanical uses: Mainly used as ornamentals and flower is also used in Puja of Hindhu religion. The leaves and stems are also used in skin diseases, more particularly leprosy; and they are prescribed as a bath to patients with ecchymoses.

9. *Circium arvense* (L.) Scop.

Local name: Silkanta

Habit: Annual herb.

Part used: Leaf, stem.

Ethnobotanical uses: Mainly used as fuels. Stem and leaves of this plant are antiscorbutic.

10. *Dahlia variabilis* (Willd.) Desf.

Local name: Dahlia.

Habit: Annual herb.

Part used: Flower, leaf.

Ethnobotanical uses: Mainly used as ornamentals and others. The leaves and stems are also used in skin diseases, more particularly leprosy; and they are prescribed as a bath to patients with ecchymoses. A poultice of the leaves is applied on boils; it is said to prevent tetanus if applied to a wound.

11. *Eclipta alba* (L.) Hassk.

Local name: Kalokeshi.

Habit: Annual herb.

Part used: Leaf, root, whole plant.

Ethnobotanical uses: Paste of leaves are used in skin disease and wound. In Sohana a paste of the herb is used in glandular swellings. The plant juice of the leaves is rubbed on the shaven scalp for the purpose of promoting the growth of hair. The juice of the leaves is given in one teaspoonful doses in jaundice and fevers. The root is given to relieve the scalding of wine. The plant is considered as an astringent in China, and is used for checking haemorrhages and fluxes and strengthening the gums. The plant is rubbed on the gums for toothache, acting as a counterirritant. The plant is much used as a cure for asthma and bronchitis in Indo China. The pounded leaves are prescribed in haemorrhage. In Sri Lanka, it is used to purify the blood.

12. *Enhydra fluctuans* Lour.

Local name: Helencha.

Habit: Annual herb.

Part used: Whole plant, leaf.

Ethnobotanical uses: The whole plant is eaten as a pot herb. The leaves are slightly bitter; laxative; cure inflammation, leucoderma, bronchitis, biliousness; good in smallpox. The leaves are antibilious. The expressed juice of the leaves is used as demulcent in cases of gonorrhoea; it is taken mixed with milk, either of cow or goat. The leaves are pounded and made into a paste which is applied cold over the head as a cooling agent.

13. *Eupatorium odoratum* Linn.

Local name: Assamlata

Habit: Annual herb.

Part used: Whole plant, root, leaf.

Ethnobotanical uses: The roots and the leaves are both emetic and diuretic. The herb is used as an emmenagogue and purgative in Indo China. The plant is used in the symptomatic of snake-bite. The leaves are used whether given internally or applied externally to the part bitten. Dry plant is used as fuels.

14. *Gnaphalium polycaulon* Pers.

Local name: Banpalang

Habit: Annual herb.

Part used: Whole plant.

Ethnobotanical uses: The plant is astringent and vulnerary. The whole plant is used as cattle fodder and

fuels.

15. *Gnaphalium pulvinatum* DC.

Local name: Banpalang

Habit: Annual herb.

Part used: Whole plant

Ethnobotanical uses: The plant is astringent and vulnerary. The whole plant is used as cattle fodder and fuels.

16. *Gnaphalium indicum* Linn.

Local name: Banpalang

Habit: Annual herb.

Part used: Whole plant

Ethnobotanical uses: The plant is astringent and vulnerary. The whole plant is used as cattle fodder and fuels.

17. *Grangea maderaspatana* (Linn.) Poir.

Local name: Namuti

Habit: Annual herb.

Part used: Whole plant, leaf.

Ethnobotanical uses: In native practice it is used in ovarian disorders. The juice of the leaves is employed as an instillation for earache. In Madagascar, the leaves are used as a stomachic and antispasmodic. A decoction of the roasted leaves is given in cough and is used as an emmenagogue. The plant is also used as cattle fodder and fuels.

18. *Helianthus annuus* Linn.

Local name: Surjjamuki.

Habit: Annual herb.

Part used: Flower, seed.

Ethnobotanical uses: The oil of sunflower is used as heart disease. The flower is pungent and hot; anthelmintic, cures skin diseases, itching, ulcers, leprosy, hysteria, fever with rigor, biliousness, asthma, bronchitis, urinary discharges, anaemia, good for burning sensation in the vagina, worms in the ears, scorpion-sting. The sunflower is prescribed in snake-bite. The seeds are diuretic and expectorant. This drug has successfully been used in bronchial laryngeal, and pulmonary affections, coughs and colds.

19. *Launaea aspleniifolia* (Willd.) Hook.f.

Local name: Tikdana

Habit: Perennial herb.

Part used: Whole plant, root.

Ethnobotanical uses: The whole plants are used as cattle fodder and fuels. The root of this plant in combination with other drugs is given as a lactagogue by the Santhals. In Bombay, it is given as a lactagogue.

20. *Lactuca sativa* Linn.

Local name: Lettuce.

Habit: Annual herb.

Part used: Whole plant, leaf,

Ethnobotanical uses: The whole plant is used as salad

and vegetables. The leaves are sweet, haematinic, hypnotic, stomachic, galactagogue, improve appetite; purify the blood, cure biliousness, burning sensation, headache, troubles of the nose, bronchitis and cough due to heart disease; used in scabies, leucoderma, ophthalmia, diseases of the liver. The fresh plant is a mild sedative, anodyne, purgative, diuretic, diaphoretic and antispasmodic. It has been found useful in the treatment of the coughs in phthisis, bronchitis, asthma and pertussis.

21. *Mikania cordata* (Burm. f.) Robinson

Local name: Assamlata.

Habit: Perennial climber.

Part used: Whole plant, leaf.

Ethnobotanical uses: The whole plants are used as cattle fodder and fuels. Plant is used as a remedy for snake-bite. Leaves are used for poulticing the wounds.

22. *Parthenium hysterophorus* Linn.

Local name: Gandi Booti.

Habit: Annual herb.

Part used: Whole plant.

Ethnobotanical uses: Mainly used as fuels.

23. *Sonchus asper* (L.) Hill.

Local name: Sonchus

Habit: Annual herb.

Part used: Whole plant.

Ethnobotanical uses: The whole plant is used as fuels. Natives of Landra reported its use in jaundice. The plant is slightly bitter, diuretic, good in chronic fevers. Among the Santhals, the root is given in jaundice. In Spain, it is commonly used as an emollient.

24. *Sonchus arvensis* Linn.

Local name: Sonchus

Habit: Annual herb.

Part used: Whole plant.

Ethnobotanical uses: The whole plant is used as fuels. The plant is slightly bitter, diuretic, good in chronic fevers.

25. *Sonchus winghtianus* DC.

Local name: Sonchus.

Habit: Annual herb.

Part used: Whole plant, root, stem.

Ethnobotanical uses: The whole plant is used as fuels. An infusion of the root and leaves is used in Bengal as a tonic and febrifuge. In Indo China, the stems are prescribed as a sedative and a tonic.

26. *Spilanthes paniculata* Wall. ex DC.

Local name: Marhatitiga.

Habit: Annual herb.

Part used: Flower-heads, whole plant, leaf.

Ethnobotanical uses: The flower-heads are by far the most pungent part. They are chewed to relieve toothache, which they do by producing redness of the gums and salivation. In Indo China, the plant is boiled in

water and the whole, liquid and solid, given in dysentery. In Sri Lanka, the leaves and flowers are used for toothache and sore throat; they are also given to women at childbirth. In Madagascar, it is used as an antiscorbutic, diuretic, sialagogue, odontalgic, tonic and digestive.

27. *Synedrella nodiflora* (L.) Gaertn.

Local name: Marhatitiga

Habit: Annual herb.

Part used: Whole plant, leaf, root.

Ethnobotanical uses: The whole plants are used as cattle fodder and fuels. A poultice of the leaves is applied on boils; it is said to prevent tetanus if applied to a wound. A cold decoction of the roots is used as a lotion in purulent ophthalmia.

28. *Tagetes patula* Linn.

Local name: Genda.

Habit: Annual herb.

Part used: Flower, leaf.

Ethnobotanical uses: In addition to colouring foods, yellow dye from the flowers is also used to colour textiles. The whole plant is harvested when in flower and distilled for its essential oil. The oil is used in perfumery; it is blended with sandalwood oil to produce "attar genda" perfume. The oil is also being investigated for antifungal activity, including treatment of candidiasis and treating fungal infections in plants (Mares *et al.* 2004). Marigolds have a special place in Hindu worship and culture. They are often strung into ornate and beautiful garlands which are offered to the Deity in the temple. Marigold garlands are also common gifts to esteemed ones, such as spiritual leaders, special occasions honoring special people such as a couple during a Hindu wedding ceremony (Dutta *et al.* 2007). The flowers are also used in wedding ceremony and other occasions of all of the religions. The flower has pungent, bitter, acrid taste; useful in fevers and epileptic fits. The leaves are good remedy for piles, kidney troubles, muscular pain; their juice is used for earache and ophthalmia. The leaves are used as an application to boils and carbuncles; their juice is given in earache (Kirtikar and Basu 1987).

29. *Tridax procumbens* Linn.

Local name: Tridhara.

Habit: Perennial herb.

Part used: Whole plant, leaf, flower.

Ethnobotanical uses: Its expressed juice is used in bleeding. The leaves are good for piles, kidney troubles, muscular pain; their juice is used for earache and ophthalmia. The flower is bitter; astringent, carminative, stomachic; good for the teeth and the gums; lessens inflammation; useful in scabies, belching, scorpion and snake poisoning, liver complaints, bleeding piles. The flowers are employed in diseases of the eyes and for unhealthy ulcers, internally they are said to purify the blood, their juice is given as a remedy for bleeding piles. Dry plants are used as fuels.

30. *Vernonia patula* (Dryand) Merrill

Local name: Kuksim.

Habit: Annual herb.

Part used: Flower heads.

Ethnobotanical uses: A popular medicine in Annam for luxations, ulcers and wounds. It is given for dysmenorrhoea and dropsy. The flower heads are considered ascaricidal. Dry plants are used as fuels.

31. *Vernonia cinerea* (Linn.) Less.

Local name: Kuksim.

Habit: Annual herb.

Part used: Whole plant, flower, root.

Ethnobotanical uses: The plant is sweet, cold; tonic, stomachic, astringent; cures asthma and bronchitis. Its flowers are used in curing fevers and leucoderma. In Sri Lanka, it is used for wounds and sores, and taken internally to promote perspiration. In Chota Nagpur, the whole plant is given as a remedy for spasm of the bladder and strangury; the flowers are administered for conjunctivitis; the root is given for dorpsy. Dry plants are used as fuels.

32. *Wedelia chinensis* (Osbeck) Merrill

Local name: Mohavringaraj.

Habit: Perennial herb.

Part used: Whole plant, leaf, root.

Ethnobotanical uses: The plant juice of the leaves is rubbed on the shaven scalp for the purpose of promoting the growth of hair. The juice of the leaves is given in one teaspoonful doses in jaundice and fevers. The root is given to relieve the scalding of wine. The plant is considered as an astringent in China, and is used for checking haemorrhages and fluxes and strengthening the gums. The plant is rubbed on the gums for toothache, acting as a counterirritant. The plant is much used as a cure for asthma and bronchitis in Indo China. The pounded leaves are prescribed in haemorrhage. In Sri Lanka, it is used to purify the blood.

33. *Wedelia trilobata* (L.) A.S. Hitchc.

Local name: Mohavringaraj

Habit: Perennial herb.

Part used: Leaf.

Ethnobotanical uses: The leaves are considered tonic, alterative, and useful in cough, cephalalgia, skin diseases and alopecia. An infusion of the plant is given in Indo China for the swelling of the abdomen.

34. *Xanthium indicum* Linn.

Local name: Banokra.

Habit: Annual herb.

Part used: Whole plant, stem, fruit, root, leaf.

Ethnobotanical uses: The young stem is used as diabetes. The root is a bitter tonic, useful in cancer and strumous diseases. The prickly fruit is considered cooling and demulcent and is given in small-pox. The herb is prescribed in snake-bite and scorpion-sting. In China, the

burs are used as a tonic, diuretic, diaphoretic and sedative. The herb is used as an emollient and astringent in Indo China. An extract of the root is applied to ulcers, boils and abscesses. The leaves were formerly official in Europe, and were administered internally in scrofula and in herpes. The whole plant is used as fuels.

35. *Youngia japonica* (L.) DC.

Local name: Crepis

Habit: Annual herb.

Part used: Leaf, root.

Ethnobotanical uses: The leaves applied to wounds act as a styptic and heal them quickly. The juice of the root is said to possess antilithic properties. The dry plant is used as fuels.

36. *Zinnia peruviana* (L.) L.

Local name: Zinnia

Habit: Annual herb.

Part used: Leaf, stem.

Ethnobotanical uses: Mainly used as ornamentals. The leaves and stems are also used in skin diseases, more particularly leprosy; and they are prescribed as a bath to patients with ecchymoses. A poultice of the leaves is applied on boils; it is said to prevent tetanus if applied to a wound.

DISCUSSION

Since its conception in 1895 (Harshberger, 1896), 'ethnobotany' has proved a rather difficult term to define. Harshberger himself regarded it as simply 'the use of plants by aboriginal peoples', yet during the century which has intervened, considerable attention has focused not only on how plants are used, but also on how they are perceived and managed, and on the reciprocal relationships between human societies and the plants on which they depend. As a result, ethnobotany has been repeatedly redefined and even now no definitive agreement in its interpretation has been reached (Yen, 1993). However, for the purposes of this text, ethnobotany is considered to encompass all studies which concern the mutual relationships between plants and traditional peoples.

Historically, the field of ethnobotany has belonged to the explorers and adventures of Europe who observed and documented the uses of plants by the aboriginal peoples they encountered on their travels. For example, Christopher Columbus, discovered tobacco (*Nicotiana* spp) in Cuba during his infamous voyage of 1492, while almost 350 years later. British explorer Richard Spruce first noted the psychoactive properties of the South America vine *Banisteriopsis cappi*; both resulted from observations of plants used by local peoples (Simpson and Conner-Ogorzaly 1986; Schultes, 1983). These early botanical discoveries in the New World marked the beginnings of a long tradition of ethnobotanical study in the American continent- a tradition which culminated in the formalisation of ethnobotany as a field of academic study.

During the second half of the nineteenth century, the study of plants used by Native Americans had become more rigorous than previously, as accurate taxonomic descriptions of the continents flora became available, and Palmer and another American botanist Stephen Powers, brought scientific exactness to the field (Ford, 1978). Their careful work soon precipitated the publication of many systematic treatments of the subject and in 1873 Powers introduced the term 'aboriginal botany' to describe the botanical investigation of native plant use, a term which was readily accepted by the academic community over the next 25 years.

As ethnobotany was redefined, the relevant data accumulated at a rapid pace: ethnologies specially devoted to uses of plants included general studies of plants used currently in daily and ceremonial life by extant tribes (Glimore 1919; Densmore, 1928) as well as those used in the past (Harshberger, 1896); the uses of particular plant species by a range of groups were compared (Bell and Castetter 1937); investigations of traditional agriculture and wild plant foods increased (Barrows 1931; Castetter and Bell 1951; Conklin 1954a). Soon, the study of traditional plant knowledge began to play a significant part in the development of anthropological theory, and while the study of Tsembaga horticulture in New Guinea contributed to early ideas in cultural ecology (Rappaport, 1968), the analysis of plant names and systems of folk classification provided an increasingly popular basis for the exploration of human cognition (Conklin 1954b; Berlin *et al.* 1973).

Outside Europe and America, academic research into indigenous plant knowledge has become widespread: by 1878 in Australia, Joseph Bancroft presented an ethnopharmacological paper on the chemical properties and Aboriginal uses of pituri (*Duboisia* spp) to the Queensland Philosophical Society (Bancroft 1878); in India the publication of ethnobotanical data intensified during the 1920s as traditional herbal medicine received increasing attention (Jain, 1989). Since these early reports, ethnobotanical research in both Asia and Australasia has expanded to include studies on aspects ranging from the representation of plants in art and myth to the role of indigenous practice in vegetation management, many of which may be found in the publications of the Society of Ethnobotanists in India (Jain, 1981, 1987, 1989) and the Australian Institute of Aboriginal and Torres Strait Islander Studies in Canberra, South Australia.

Equally, in Africa, traditional rangeland management and the uses of wild and cultivated plants have received academic scrutiny (Wickens *et al.*, 1985; Abbiw, 1990; Smith, 1992), although perhaps some of the most influential work has been encapsulated in Paul Richards' *Indigenous Agricultural Revolution*. In this seminal text, Richards highlights the value of traditional farmers' Knowledge in West Africa, and demonstrates that even after the 'Green Revolution' of Western science, many of the most successful innovations in food-crop production has been based on indigenous knowledge (Richards, 1985).

By the beginning of this decade (1990s), the study of traditional plant-lore had gathered considerable momentum, and between 1990 and 1994, academic publications in ethnobotany almost doubled compared with the previous 5-year period. This same period also saw a number of other important developments in ethnobotany, including the establishment of the People and Plants collaboration between WWF international, UNESCO and the Royal Botanic Gardens, Kew (Hamilton 1994), the launch of the Oxford-based Foundation for Ethnobiology (FEB 1993), and the publication of the first issue of CIRAN's Indigenous Knowledge and Development Monitor (CIRAN 1993).

This recent intensification in research activity, has been reflected to some extent by an increase in the teaching of ethnobotany, particularly in the USA, where the first masters degree programme in ethnobotany was established at the University of New Mexico (Ford, 1978). Graduate programmes are now available at several universities both in America and the UK, while undergraduate studies in economic botany and ethnobotany are becoming increasingly widespread (Jain *et al.*, 1986; Flaster, 1994). However, interest in ethnobotany has not been confined simply to academic circles and since the late 1980s articles have appeared in journals ranging from Scientific American (Cox and Balick, 1994) to The Economist and Newsweek (Anon, 1988; Begley, 1988), while popular books such as Anna Lewington's *Plant for People* and Richard Rudgley's *Alchemy of Culture* have proliferated in recent years (Lewington, 1990; Rudgley, 1993).

The growing interest in ethnobotany is due, at least in part, to changing attitudes towards traditional peoples. For during the middle of the twentieth century, when it seemed that the world's indigenous peoples were about to disappear, traditional societies and their knowledge attracted widespread scholarly attention, primarily as part of an anthropological rescue operation (Burch and Ellanna, 1994). Since then, however, many scientists have begun to realise the practical and academic value of ethnobotanical data, and are beginning to acknowledge that traditional peoples have much to teach Western science.

Since the early ethnobotanical studies in aboriginal plant use, the scope of the subject has expanded enormously, encompassing the botanical aspects of a number of ethnoscientific fields including ethnomedicine, ethnotaxonomy and ethnoecology as well as the anthropological and botanical study of material culture and subsistence mode. For the sake of clarity, six major fields of investigation are distinguished here: ethnoecology, traditional agriculture, cognitive ethnobotany, material culture, traditional phytochemistry and palaeoethnobotany. Of necessity, each of these areas of ethnobotanical study draws from the theory and techniques of a range of established disciplines, several of which may be pertinent to any given project. For example, an ethnopharmacological study of traditional herbal pharmacopoeia might require anthropological and medical

assessments of the ethnomedical system, the taxonomic skills of botanists, the linguistic techniques of ethnotaxonomists and etymologists, and the analytical expertise of phytochemists and pharmacognosists (Cotton, 1996).

Much of the expansion and diversification of ethnobotany has occurred in the last 25 years, during which it has developed into a truly multidisciplinary field of natural science, combining the talents of anthropologists and archaeologists with those of molecular biologists and ecologists. More recently, however, there has been an increasing awareness of the considerable practical and social value of traditional knowledge, and many workers are becoming involved in applied ethnobotany- the practical application of ethnobotanical data in areas such as biodiversity prospecting and conservation biology. For example, ethnobotanical investigations by the San Francisco-based company, Shaman Pharmaceuticals Inc. have already led to the development of two antiviral products which are now in clinical trials (King and Tempesta, 1994), while indigenous management practices have been shown to have a profound influence on factors such as plant genetic diversity and habitat conservation (Soleri and Cleveland, 1993; Rajasekaran and Warren, 1994).

Ethnobotanical data have been gathered on the traditional uses of plant species, especially for abscess, for asthma, for abortion, burning sensation, blood pressure, cough, chickenpox, constipation, dysentery, diarrhoea, diabetes, eczema, fever, fracture, headache, heart disease, itches, jaundice menstrual disease, paralysis, skin disease, snake-bite, sex problem, tooth disease, vomiting, wound, worm and others (Anisuzzaman *et al.*, 2007; Rahman *et al.*, 2008).

An ethnobotanical study on the family Asteraceae of the Rajshahi Division was carried out from January 2005 to December 2007. Information gathered through structural questionnaire and interviews shows that in the study area, local people who mostly use different plant species for their diseases and ailments. During the survey, 36 plant taxa belonged to 29 genera of the family Asteraceae were mentioned by them having economic importance, of which only the ethnomedicinal values of them were highlighted. Different plant parts of different species are used as medicine for treating various diseases; bark of 1, leaf of 22, fruit of 1, root of 14, flower of 10, seed of 1, stem of 4, seed of 1 and whole plant of 22 species were used as medicine (Rahman *et al.*, 2011).

In the present study 36 plant species 29 genera of the family Asteraceae have been recorded which are used by the local people in the ailment of human diseases and 18 species have been recorded which are used in the ailment of diseases of domestic animals. On the other hand 53 human diseases recorded by traditional medicine have been recorded. Among them very common diseases are wounds cured by 11 plant species, diuretic by 7 plant species, tonic by 6 plant species, bronchitis by 6 plant species, fever by 6 plant species,

cough by 5 plant species, leprosy by 4 plant species, snake-bite by 4 plant species, ophthalmia by 4 plant species, skin disease by 4 plant species, piles by 4 plant species, asthma by 4 plant species, jaundice by 3 plant species, toothache by 3 plant species, earache by 3 plant species, burning sensation by 3 plant species, ulcers by 3 plant species, inflammations by 3 plant species, anthelmintic by 2 plant species, blood disease by 2 plant species boils by 2 plant species, pulmonary affections by 2 plant species, gonorrhoea by 2 plant species, colds by 2 plant species and scabies by 2 plant species. It has also been observed that a single species is used in the ailment of one disease (Rahman *et al.*, 2011).

The rural people are out of reach of modern system of treatment for their diseases. They largely rely on traditional system of treatment by using medicinal plants. They also depend on Kabiraj, Hakim, Baidyo and family healers. It was also found that people have alternative plants for the treatment of the same disease. It was also observed that many factors are involved in order to access modern healthcare practices in the treatment of diseases of rural areas like, lack of communication facilities, lack of trained doctors, nurses as well as medicines.

It was observed that the availability of these plants are decreasing at an alarming rate. This observation also reveals that habitat destruction, over exploitation and unplanned agriculture were the reasons for depletion of medicinal plants. Therefore, the medicinal plants used as traditional healthcare system need urgent conservation (Rahman *et al.*, 2011).

ACKNOWLEDGEMENTS

The author is grateful to the Herbarium, Department of Botany, Rajshahi University. Thanks are also due to the tribal and local people of Rajshahi, Bangladesh for their co-operation and help during the ethnobotanical studies.

REFERENCES

- Abbiw DK (1990). Useful Plants of Ghana. Intermediate Agharkar SP (1991). Medicinal Plants of Bombay Presidency. Scientific Publishers, Jodhpur, India.
- Ahmed ZU (2008). Encyclopedia of Flora and Fauna of Bangladesh. Asiatic Society of Bangladesh, Dhaka-1000, Bangladesh. 6: 263-359.
- Alam MK (1992). Medical ethno-botany of the Marma tribe of Bangladesh. *Econ. Bot.*, 46(3): 330-335
- Ali M (1980). Dinajpur Adibashi, Dinajpur Sanskrit Academy, Dinajpur, Bangladesh.
- Anisuzzaman M, Rahman A.H.M.M, Harun-Or-Rashid M., Naderuzzaman ATM, Islam AKMR (2007). An Ethnobotanical Study of Madhupur, Tangail. *J. Appl. Sci. Res.*, 3(7): 519-530.
- Anon (1988). Just what the witch doctor ordered. *Economist*, 307(7544): 75-76.
- Bancroft J (1878). Further Remarks on the Pituri Group of Plants. Government Press, Brisbane.
- Barrows D (1931). Prehistoric Pueblo foods. *Museum of Arizona Notes* 4: 1-4.
- Begley S (1988). Zombies and other mysteries; ethnobotanists seek magical, medicinal plants. *Newsweek* 111(8): 79.
- Bell WH, Castetter EF (1937). The Utilisation of Mesquite and Screwbean by the Aborigines in the American Southwest. *University of New Mexico Bulletin* No. 314, University of New Mexico Press, Albuquerque.
- Bentham G, Hooker JD (1862-1883). *Genera Palntarum*. London, U.K.
- Berlin B, Breedlove DE, Raven PH (1973). General principles of classification and nomenclature in folk biology. *Am. Anthropol.*, 75: 214-242.
- Bhattachariya S (1989). Chirangiby Bonoushadi, Vols. I-X, Ananda Publisher Ltd., Calcutta.
- Biswas K (1973). Bharatio Banoushadi, Vols. I-VI, Calcutta University Press, Calcutta.
- Burch ES, Ellanna LJ (1994). Introduction. In: Burch ES, Ellanna LJ (eds.) *Key Issues in Hunter-Gatherer Research*. Berg Publishers Inc., Oxford, pp.1-8.
- Castetter EF, Bell WH (1951). *Yuman Indian Agriculture*. University of New Mexico Press, Albuquerque.
- CIRAN (1993). *Indigenous Knowledge and Development Monitor* 1(1).
- Conklin HC (1954a). An ethnoecological approach to shifting agriculture. *Transactions of the New York Acad. Sci.*, 17: 133-142.
- Conklin HC (1954b). The Relation of Hanunoo Culture to the Plant World (Yale University PhD, 1955). University Microfilms Ltd, High Wycombe.
- Cotton CM (1996). *Ethnobotany Principles and Applications*. John Wiley and Sons Ltd. Baffins Lane, Chichester, West Sussex PO191UD, England.
- Cox PA, Balick MJ (1994). The ethnobotanical approach to drug discovery. *Sci. Am.*, 270(6): 60-65.
- Densmore F (1928). *How Indians use Plants for Foods, Medicine and Crafts*. Dover Publications Inc. New York.
- Dey TK (1996). *Useful Plants of Bangladesh*. The Ad. Communication, 385, Sirajuddowlah Road, Anderkilla, Chittagong, Bangladesh.
- Dutta BK, Karmakar S, Naglot A, Aich JC, Begum M (2007). Anticandidal activity of some essential oils of a mega biodiversity hotspot in India. *Mycoses*, 50 (2):121-124.
- FEB (1993). *The Foundation for Ethnobiology. Media Launch & Symposium* 2: 2.
- Flaster P. (1994). SEB Classes. *Plants & People: Society for Economic Botany Newsletter*. Spring: 2.
- Ford RI (1978). Ethnobotany: historical diversity and synthesis. In: Ford RI (ed.) *The Nature and Status of Ethnobotany (Anthropological papers, Museum of Anthropology, University of Michigan No. 67)*. Ann Arbor, Michigan, pp.33-50.

- Ghani A (1998). Medicinal Plants of Bangladesh. Asiatic Society of Bangladesh, Dhaka.
- Glimore MR (1919). Uses of Plants by the Indians of the Missouri River Region. University of Nebraska Press. London.
- Hamilton MB (1994). Ex situ conservation of wild plant species: time to reassess the genetic assumptions and implications of seed banks. *Conserv. Biol.*, 8: 39-49.
- Harshberger JW (1896). The purposes of ethnobotany. *Botanical Gazette*, 21: 146-154.
- Hassan MA (1988). *Amader Banoushadi Shampad*, Hassan Book House, Dhaka.
- Hassan MA, Huq AM (1993). *Gas Gasra Deeya Chikithsha*, Hassan Book House, Dhaka, Bangladesh.
- Hooker JD (1877). *Flora of British India*, Reeve and Co. Ltd., London. Vols. 1-7.
- Huq AM (1986). Name Changes in Bangladesh Angiosperms. Bangladesh National Herbarium, BARC, Dhaka, Bangladesh.
- Huq AM (1986). *Plant Names of Bangladesh*. Bangladesh National Herbarium, BARC, Dhaka, Bangladesh.
- Jain SK (1981). *Glimpses of Indian Ethnobotany*. (ed.). Oxford & IBH. New Delhi. India.
- Jain SK (1987). *A Manual of Ethnobotany*. (ed.). Scientific Publishers, Jodhpur, India.
- Jain SK (1989). *Methods and Approaches in Ethnobotany*. (ed.). Proceedings of the 2nd training course in ethnobotany, Lucknow, Surya Publications, Dehradun.
- Jain SK (1996). *Glimpses of Indian Ethnobotany*, Oxford & IBH Publishing Co. New Delhi, Bombay, Calcutta.
- Jain SK, Minnis P, Shah NC (1986). *World Directory of Ethnobotanists*. Surya Publications, Dehradun, India.
- Khan MS (1998). Prospects of Ethnobotany and Ethnobotanical Research in Bangladesh. In: Banik R.L., Alam MK, Pei SJ, Rastogi A (eds.), *Applied Ethnobotany*, BFRI, Chittagong, Bangladesh. Pp. 24-27.
- Khan MS, Huq AM (1975). *Medicinal Plants of Bangladesh*, BARC, Dhaka, Bangladesh. Technology Publications Ltd/RBG Kew, London.
- Khan MS, Hassan MA, Uddin MZ (2002). Ethnobotanical survey in Rema-Kalenga Wildlife Sanctuary (Habiganj) in Bangladesh. *Bangladesh J. Plant Taxon.* 9(1): 51-60.
- Kirtikar KR, Basu BD (1987). *Indian Medicinal Plants*. Lalit Mohan Basu, Allahabad, Jayyed Press, New Delhi, India. 1-4, 1313-1449.
- Koche DK, Shirsat RP, Imran MSN, Zingare AK, Donode KA (2008). Ethnobotanical and Etnomedicinal Survey of Nagzira Wild Life Sanctuary, District Gondia (M.S.) India- Part I. *Ethnobotanical Leaflets*, 12:56-69.
- Lewington A (1990). *Plants for People*. The Natural History Museum Publications, London.
- Mares D, Tosi B, Poli F, Andreotti E, Romagnoli C (2004). Antifungal activity of *Tagetes patula* extracts on some phytopathogenic fungi: Ultrastructural evidence on *Pythium ultimum*. *Microbiol. Res.*, 159(3): 295-304.
- Prain D (1903). *Bengal Plants*, Botanical Survey of India, Calcutta Vols. 1-2.
- Rahman AHMM, Anisuzzaman M, Haider SA, Ahmed F, Islam AKMR, Zaman ATMN (2008). Study of Medicinal Plants in the Graveyards of Rajshahi City. *Res. Jour. of Agric. Biol. Sci.* 4(1): 70-74.
- Rahman AHMM (2009). Taxonomic Studies on the Family Asteraceae (Compositae) of the Rajshahidivision. PhD thesis, Department of Botany, University of Rajshahi, Bangladesh.
- Rahman A.H.M.M., Kabir E.Z.M.F., Sima S.N., Sultana R.S., Nasiruddin M., Zaman A.T.M.N. (2010). Study of an Ethnobotany at the Village Dohanagar, Naogaon. *J. Appl. Sci. Res.* 6(9): 1466-1473.
- Rahman AHMM, Islam AKMR, Rahman MM (2011). The Family Asteraceae of Rajshahi Division, Bangladesh, VDM Verlag Dr. Muller Publishing House Ltd., Germany.
- Rahman A.H.M.M., Jahan-E-Gulsan M.S., Alam M.S., Ahmad S, Zaman ATMN, Islam A.K.M.R. (2012). An Ethnobotanical Portrait of a Village: Koikuri, Dinajpur with Reference to Medicinal Plants. *Int. J. Biol. Sci.* 2(7): 1-10.
- Rajasekaran B, Warren DM (1994). Indigenous Knowledge for socioeconomic development and biodiversity conservation: the Kolli hills. *Indigenous Knowl. Dev. Monit.*, 2(2): 13-17.
- Rappaport RA (1968). *Pigs for the Ancestors: Rituals in the Ecological of a New Guinea People*. Yale University Press. London.
- Richards P (1985). *Indigenous Agricultural Revolution*. Unwin Hyman, London.
- Roy S, Uddin MZ, Hassan MA, Rahman MM (2008). Medico-botanical report on the Chakma community of Bangladesh. *Bangladesh J. Plant Taxon.* 15(1): 67-72.
- Rudgley R (1993). *The Alchemy of Culture: Intoxicants in Society*. British Museum Press, London.
- Schultes RE (1983). Richard Spruce: an early ethnobotanist and explore of the northwest Amazon and northern Andes. *J Ethnobot.*, 3: 139-147.
- Simpson BB, Conner-Ogorzaly MC (1986). *Economic Botany*. McGraw Hill, London.
- Sing AP (1998-2001). *Ethnobotanical Studies of Chandigarh Region*. Mohali, India.
- Smith AB (1992). *Pastoralism in Africa: Origins and Development Ecology*, Hurst & Company, London.
- Soleri D, Cleveland DA (1993). Hopi crop diversity and change. *J. Ethnobiol.*, 13: 203-232.
- Wickens GE, Goodin JR, Field DV (1985). *Plants for Arid Lands*. Unwin Hyman, London.
- Yen DE (1993). The origin of subsistence agriculture in Oceania and the potentials for future tropical food crops. *Econ. Bot.*, 47: 3-14.