

THE USE OF PLANTS IN TRADITIONAL HEALTH CARE PRACTICE OF THE *SHAIJI* COMMUNITY IN SOUTHWESTERN BANGLADESH

M. Abdul Halim, M. S. H. Chowdhury*, A. I. Wadud, M. S. Uddin, S. K. Sarker & M. B. Uddin

Department of Forestry, School of Agriculture and Mineral Sciences, Shahjalal University of Science and Technology, Sylhet, Bangladesh

Received September 2006

ABDUL HALIM, M., CHOWDHURY, M. S. H., 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 southwestern Bangladesh. The *Shaiji*, a religio-cultural community of southwestern Bangladesh, have an indigenous medication system using locally grown plants. A total of 36 individuals were interviewed using questionnaire. The *Shaiji*, living in the interior or near bushy habitats for the sake of meditation and other spiritual activities, were found to be totally dependent on herbal medicines for treating ailments ranging from casual cold to diabetes. As this indigenous knowledge is handed down orally from generation to generation, there is a great possibility that the knowledge will be lost over time. A total of 47 plant species were used by the *Shaiji* for medicinal purposes. They mainly used leaves, either taken orally or used externally. They used the plant species in a sustainable manner and also cultivated some. Thus, they play an important role in biodiversity conservation.

Keywords: Medicinal plants, *Shaiji*, indigenous knowledge

ABDUL HALIM, M., CHOWDHURY, M. S. H., WADUD, A. I., UDDIN, M. S., SARKER, S. K. & UDDIN, M. B. 2007. Penggunaan tumbuh-tumbuhan dalam penjagaan kesihatan tradisional komuniti *Shaiji* di barat daya Bangladesh. *Shaiji*, satu komuniti beragama dan beradat di barat daya Bangladesh mempunyai sistem perubatan asli menggunakan tumbuh-tumbuhan tempatan. Sebanyak 36 individu di temu bual menggunakan borang soal selidik. *Shaiji* hidup di kawasan pedalaman dan berdekatan habitat berbelukar untuk bertafakur dan menjalankan aktiviti keagamaan yang lain. Mereka bergantung sepenuhnya kepada ubat-ubatan herba untuk merawat berbagai-bagai penyakit daripada demam selesema biasa ke penyakit kencing manis. Memandangkan pengetahuan asli ini diturunkan secara mulut dari satu generasi ke satu generasi, besar kemungkinan pengetahuan ini akan hilang dengan masa. Sebanyak 47 spesies tumbuh-tumbuhan digunakan oleh *Shaiji* sebagai ubat. Mereka banyak menggunakan daun, sama ada dimakan atau luaran. Mereka menggunakan spesies tumbuh-tumbuhan secara lestari dan menanam sesetengah tumbuh-tumbuhan. Oleh itu, mereka memainkan peranan yang penting dalam pemuliharaan kepelbagaian biologi.

INTRODUCTION

From the pre-historic era, men have been using plants as medicine and in recent years, interest in the exploitation of plants as pharmaceuticals, herbal remedies, flavourings, perfumes, cosmetics and other natural products has greatly increased (Iqbal 1993, Walter 2001, Rao & Arora 2004). Through evolution, plants have developed large numbers of chemical substances to defend themselves against insect pests, and fungal and other pathogenic diseases. Some of these chemicals can also fight against micro-organism and other diseases in the human body. They represent an important source of natural drugs.

Their highly complex molecular structures often surpass the imagination of the chemist and cannot easily be reproduced in the laboratory (Seters 2003).

The earliest mention of the medicinal use of plants is found in the *Rig Veda* (4500–1600 BC) which contains information on the medicinal use of plants in the Indian subcontinent (Ghani 2003). According to Kadir (1990) and Yusuf *et al.* (1994), about 5000 plant species are found in Bangladesh, of which 1000 are said to have medicinal qualities. A total of 85% of the country's population lives in rural areas that

* Author for correspondence. Present address: Office of the Deputy Commissioner, Jamalpur-2000, Bangladesh.
E-mail: shaheedfeni@yahoo.com

depend mainly on herbal medicines. Their knowledge regarding medicinal plants is lost due to change of habitats and culture (Banik 2001). The districts of Kustia, Chuadanga and Meherpur are situated in the southwestern part of Bangladesh. Although there are no significant forest areas, there is a great diversity of medicinal plants in the homesteads, gardens, roadsides, pond banks and graveyards in this region. The *Shaiji* people are followers of Lalon Shah (1774–1890) who lived in Chheuriya of Kustia district (Nehal 2004). Lalon Shah was a singer and composer of *Baul* (a mendicant folk sect) religious songs.

In these districts, there are a number of followers of Lalon Shah living in bushy areas practising meditation and other spiritual activities. Their socio-economic activity varies from person to person. Some lead normal life with economic activities such as farming, small business and day labourers. They have families. There are some who do not have families and they live by begging.

The *Shaiji* use medicinal plants rather than allopathic and homeopathic treatments for their health care. The traditional healers are skilled botanists and have great talent for locating plants with medicinal properties (Seters 2003). Knowledge of the richness and the use of medicinal plants by this religio-cultural community may provide some important clues to bio-medical scientists in their search for newer organo-chemical contents which can be used against some existing non-curable diseases.

In Bangladesh, the knowledge of this community remains largely undocumented and is handed down orally. The younger generation has very different ambitions. Therefore, the traditional knowledge is doomed to be lost. That is why ethnobotanists regard the death of a shaman to the loss of a national library. A number of studies were carried out earlier on *Shaiji* music and spiritual life. However no study was carried on their indigenous medical knowledge. Therefore, this study was undertaken to ascertain their indigenous knowledge on medicinal plants in Kustia and adjacent regions.

METHODOLOGY

Although the *Shaiji* are distributed sporadically all over Bangladesh, three districts, namely

Kustia, Chuadanga and Meherpur, were selected because most of them live in these areas. The study was conducted from January till May 2006.

In each district, one sub-district was selected. These were Kumarkhali from Kustia, Alamdanga from Chuadanga and Meherpur Sadar from Meherpur. A list of key respondents (mostly elders) was prepared based on their expertise in using medicinal plants. There was no gender consideration. Twelve *Shaiji* from each sub-district were randomly selected from the list to maintain a sampling frequency of 25%. They were interviewed using a semi-structured questionnaire to ascertain the plants they use, parts they use, for what diseases, sources they prefer, the reason for cultivating any plant and the eagerness of the younger generation in this regard. The plant species used for medicine were firstly identified by local names. The scientific names were obtained by consulting the literature (BARC 1972–1992, Chopra *et al.* 1992, Chevallier 1996, Das & Alam 2001). A final list of the species used for medicinal purposes was prepared based on the study by Dey (2006). The method of utilization of plant species was obtained from skilled and experienced older members of the community. A random study was conducted to ascertain the dependency of the *Shaiji* people on medicinal plant for treating different diseases. In this case, 100 respondents of > 20 years old were asked whether they use medicinal plants and the number was noted down.

RESULTS AND DISCUSSION

Medicinal plants used

A total of 47 plant species were frequently used by the *Shaiji* for curing ailments. The plants were herbs, shrubs, climbers and trees. Herbs were dominant (36.2%) followed by shrubs (27.7%), trees (23.4%) and climbers (12.8%) [Figure 1]. A similar trend was also observed by Ghani (2003) who conducted researches on other communities of Bangladesh.

A total of 34 families were identified of which the highest number of species (7 species) was found under the family Leguminosae followed by Compositae and Convolvulaceae (3 species each), Graminae, Verbenaceae,

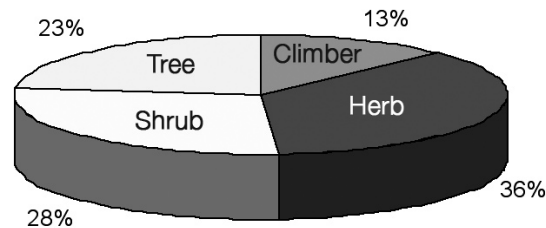


Figure 1 Percentage of the type of medicinal plants recorded from the study areas

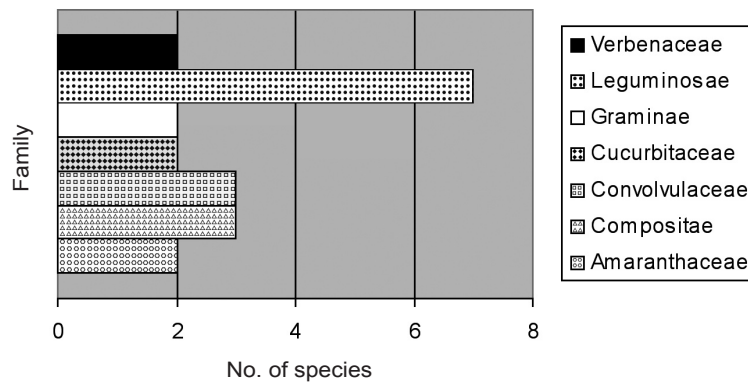


Figure 2 Number of species under different families of medicinal plants

Cucurbitaceae and Amaranthaceae (2 species each) [Figure 2]. Single species each was found from Apocynaceae, Asclepiadaceae, Menispermaceae and from 24 other families. The three families, i.e. Apocynaceae, Asclepiadaceae and Menispermaceae, were also reported by Schippmann *et al.* (2002) to be widely used for medicinal purposes.

It is evident from the study that the *Shaiji* people are greatly (85%) dependent on herbal medicines. Usually the older members of the community prepare medicine from the plants and prescribe to the sick. The survey revealed that not only the older *Shaiji* but also the younger ones had a bit of knowledge of medicinal values of some plants, usually those species used to treat common diseases such as pains and aches, wounds, cuts, burns, scabies, fever, dysentery and diseases of the stomach. Diabetes was found to be treated by the *Shaiji* using *Coccinea cordifolia* and *Tagetes patula*. This is in accordance with the findings of BMRCB (1979), Ghani (2003) and Dey (2006). Most of the *Shaiji* frequently treat snakebites using *Cassia sophera*, *Punica granatum*, *Rauwolfia serpentina*, *Argyrea nevosa* and *Acalypha indica* (Figure 3). Dey (2001) reported the use of *R. serpentina* for treating snakebites.



Figure 3 *Acalypha indica*

Traditional herbal practices

The study revealed that the *Sahiji* used various parts of the plants as medicine. Leaf (frequency 20) and root (frequency 13) were mostly used, while whole plant (frequency 1) and latex (frequency 1) were least used (Figure 4). Anonymous (2005) reported that root is mostly

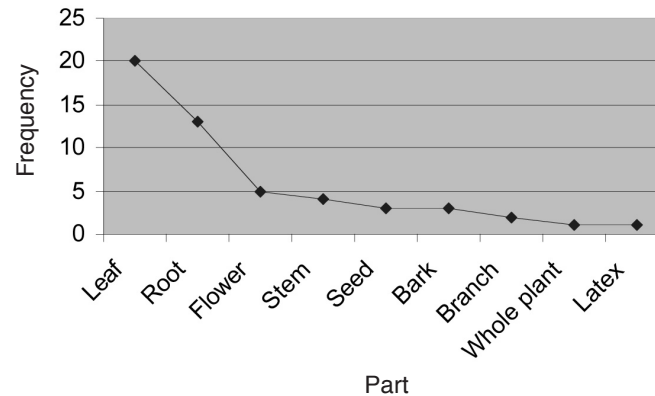


Figure 4 Frequency of plant parts used

used when using medicinal plant parts that are wildy harvested. This makes the sustainable harvesting of medicinal plants difficult. In this study, the *Shaiji* used mostly leaves. This ensures sustainable harvesting of medicinal plants. It provides an incentive to protect and maintain wild populations and their habitats and the genetic diversity of medicinal plants (Schippmann *et al.* 2002).

The *Shaiji* traditional medicinal practices also used other ingredients besides plants in treatments (Table 1). This study noted the use of camphor, vermilion and animal products such as cow's or goat's milk and chicken eggs as ingredients in traditional herbal medicines. A few remedies were applied externally (*Calotropis gigantea*, *Cynodon dactylon*, *Litsea glutinosa*, *Crocus sativus*, *Haliotropium indicum*, *Punica granatum*, *Paederia foetida*, *Ficus hispida*, *Vitex peduncularis*, *Coccinea cordifolia*, *Lablab purpureus*, *Hibiscus rosa-sinensis*, *Canabis sativa*, *Michelia champaca*, *Moringa oleifera*, *Semicarpus anacardium*, *Calendula officinalis* and *Argyrea nevosa*) for curing ailments such as wounds, cuts, scabies, burns, louse on hair and acne. Most of the plant parts were reported to be consumed orally after some degree of processing such as grinding, blending, soaking, boiling and decanting. During the course of the study, we were informed of a peculiar and interesting ingredient of herbal medicine. It was the cow's urine with which flowers of *H. rosa-sinensis* were ground to apply as an ointment over baldhead in the treatment of baldness of males. Dey (2001, 2006) reported the use of *H. rosa-sinensis* as hair tonic by the different communities of Bangladesh.

Medicinal plants source preference

The aged *Shaiji* preferred wild sources (village groves, jungles, graveyards, roadsides and pond banks) for medicinal plants collection to planted sources due to the belief that wildy collected materials are more effective than planted ones. Scientific studies partly support this. Medicinal properties in plants are due mainly to the presence of secondary metabolites that plants need in their natural environments under particular conditions of stress and competition, which perhaps would not be expressed under monoculture conditions. Active ingredient levels can be much lower in fast growing cultivated stocks. In wild populations, plants can be older due to slow growth rates and can have higher levels of active ingredients. While it can be presumed that cultivated plants are likely to be somewhat different in their properties from those gathered from the natural habitats, it is also clear that certain values in plants can be deliberately enhanced under controlled conditions of cultivation (Palevitch 1991, Uniyal *et al.* 2000). This finding is in accordance with the findings of Anonymous (2005) as in Bangladesh more than 90% of medicinal plants come from the wild. Without the wild sources, the *Shaiji* people collect plants that are usually cultivated by the farmers either in the field or in homesteads. These are *Zingiber officinale*, *Ananas comosus*, *Cajanus cajan*, *Punica granatum*, *Bambosa* spp., *Tagetes patula*, *Lablab purpureus* and *Bombax ceiba*.

Although the *Shaiji* people prefer wild sources, they also cultivate a number of plants that are rare. For example, *Rauwolfia serpentina*,

Table 1 List of medicinal plants of the *Shaitji* community of southwestern Bangladesh: their uses, parts used and application

Species	Parts used	Ailment	Application
<i>Haliotroopium indicum</i>	Leaf	All types of scabies	The leaves are ground well with a little water to make a paste and the paste is placed over the scabies
<i>Cassia sophera</i>	Leaf, root	Inflammation of the eye	One or two drops of juice obtained from leaves are used daily until it cures
<i>Punica granatum</i>	Root, fresh	Snakebite (human)	Two or three teaspoonfuls of juice obtained from leaves and root are taken directly
	flower, leaf, bark	Snakebite (human) For large and prominent breast Worm attack in the intestines	Two or three teaspoonfuls of juice obtained from root are taken directly Fresh flowers are ground well with some sweet flags and then heated with mustard oil. The mixture is used as massage in the morning and at night regularly. Bark, roots and leaves are blended to make juice which is taken at a dose of 2 ml regularly in the morning before breakfast
<i>Tinospora cordifolia</i>	Leaf, twig	Spermatorrhoea	All used parts are soaked in water for about 12 hours and taken in the morning and evening until it cures
<i>Bombax ceiba</i>	Bark, root of sapling		
<i>Plantago ovata</i>	Seed		
<i>Abroma augusta</i>	Petiole		
<i>Tinospora cordifolia</i>	Leaf	Gonorrhoea	2 ml of juice obtained from leaves are taken with honey daily in the morning for two or three weeks
<i>Bombax ceiba</i>	Root of sapling	Spermatorrhoea	Roots of saplings are dried and powdered which is taken about 2 g with goat's milk before going to bed
<i>Scirpus articulatus</i>	Branch, root	Baby's diarrhoea/ vomiting	Roots are ground well to make juice and given to babies before breakfast
<i>Litsea glutinosa</i>	Leaf	Insomnia and neurosis	Leaves are macerated well until they look like curd and then applied over the head for two to three days
<i>Paederia foetida</i>	Leaf, stem	Pain in different parts of the body	The leaves are ground well and applied over the body in association with mustard oil
<i>Crocus sativus</i>	Leaf	Scabies	The leaves are ground well to make juice and mixed with camphor and vermillion. A paste is made and placed over the scabies.
<i>Rauwolfia serpentina</i>	Tender leaf	Snakebite	Two or three teaspoonfuls of leaf extract are taken directly
<i>Cynodon dactylon</i>	Leaf	Wounds	Leaves are ground well to make a paste and placed over wounds
	Mature leaf	Blood dysentery Scabies	Leaf extract and molasses are mixed with water for making drinks. The drink is taken directly. Leaves are ground well to make juice and mixed with camphor and vermillion. A paste is made and placed over scabies.
<i>Vitex peduncularis</i>	Root	Scabies	Roots are ground well for extract and mixed with camphor and vermillion, and a paste is made. It is then heated well with mustard oil and placed over scabies.
<i>Centella asiatica</i>	Leaf	Piles	Leaves of <i>C. asiatica</i> and root of <i>S. articulatus</i> are ground well to prepare juice. The juice is taken together with goat's milk before breakfast.
<i>Coccinea cordifolia</i>	Root	Fracture	The root of <i>C. cordifolia</i> and the fresh green dust of <i>Bambosa</i> spp. are ground well without water and the paste is mixed with eggs (hen). After 24 hours the paste is applied over the fracture successively for three days. After three days the injured part is massaged with heated butter until it cures.
<i>Bambosa</i> spp.	Green dust of fresh culm		
<i>Coccinea cordifolia</i>	Leaf	Dysentery	Leaf extract is taken with 200 ml of fresh cow's milk and 100 g of raw rice obtained from sunned paddy. Rice is chewed and milk is drunk simultaneously.
	Leaf, root	Diabetes	Juice obtained from roots and leaves are taken daily in the morning and evening at a dose of two or three teaspoons after heating slightly
<i>Calotropis gigantea</i>	Latex	Acne/ itching	Latex is directly used on infected areas
<i>Ananas comosus</i>	Leaf	In hiccup	Juice obtained by grinding is taken in association with sugar-candy
<i>Ipomoea mauritiana</i>	Root	To increase mother's breast-milk	Roots are ground well and taken orally with milk
<i>Alocasia indica</i> (Figure 5)	Tuber	Nyctalopic	The fleshy tuber is cut into small pieces and dried well. Thereafter, it is taken after cooking for some days.

(continued)

Table 1 (continued)

Species	Parts used	Ailment	Application
<i>Ipomoea aquatica</i>	Leaf, stem	Poisoning	Leaves together with branches are ground well to make juice. The juice is then fed to the poison affected person together with salt. Then the patient will vomit and thereafter s/he is given some butter. After the treatment, it should be noted that the patient must not sleep within four/five hours.
<i>Tagetes patula</i>	Leaf	Diabetes	Mix 2 ml of leaf extract (<i>T. patula</i>) and 4 ml of leaf extracts (<i>C. cajan</i>). Take daily in the morning.
<i>Cajanus cajan</i>	Leaf		
<i>Lablab purpureus</i>	Leaf	Ringworm	Leaves are rubbed with some salt to extract the juice which is to be applied on infected areas
<i>Lemma paucicostata</i>	Root	Caries	The roots are chewed for a while daily until it cures
<i>Hibiscus rosa-sinensis</i>	Flower	Bald head	The flowers are ground with cow's urine and is used as ointment on bald areas
<i>Canabis sativa</i>	Inflorescence	Itching	100 ml of coconut oil in association with 25 g of <i>C. sativus</i> and 50 g pulp of <i>B. hispida</i> are boiled and applied while it is still hot
<i>Benincasa hispida</i>	Inner flesh		
<i>Mucuna utilis</i>	Root	Irregular menstruation	2 ml of juice are taken along with carrot daily in the morning for five to seven days
<i>Kalanchoe lacinata</i>	Leaf	Cholera	One leaf and 25 black-peppers are ground well and the mixture is taken for some days
<i>Michelia champaca</i>	Leaf	Louse attack on hair	Head is smeared with juice obtained from leaves by grinding
<i>Syzygium cumini</i>	Leaf	Dysentery	50 ml of goat's milk and 50 ml of leaf extracts are taken twice or thrice daily for three or four days
<i>Celostia cristata</i>	Seed	Piles	Seeds are ground well with whey and the paste is used to form small tablets and dried. Single tablet is taken with chickpeas soaked with water daily in the morning.
<i>Achyranthes aspera</i>	Root	Cholera	4 g of roots are ground well and taken until it cures
<i>Moringa oleifera</i>	Root	Excess menstruation Spleen and liver enlargement.	2 g of root are ground well with water and taken
<i>Cassia fistula</i>	Leaf	Rheumatism, ringworm, paralysis	Fresh juice obtained from roots is mixed with ground mustard. Then the paste is taken.
<i>Semecarpus anacardium</i>	Seed	Leprosy	Juice obtained from ground leaves is taken regularly
<i>Catandula officinalis</i>	Flower	Wounds, burns, cuts	Oil obtained from ground seed is used for massage
<i>Clerodendrum indicum</i>	Bark of root	Asthma	700 g pulp of fresh flower are soaked with 450 ml strong alcohol into an airtight container and the container shaken regularly for certain period. Thereafter, the liquid is filtered and dabbed on the infected areas using cotton wool.
<i>Zingiber officinale</i>	Tuber		The dried bark of the root (<i>C. indicum</i>) is powdered and mixed with the powder of dried <i>Z. officinale</i> . Then it is taken along with water or milk.
<i>Delonix regia</i>	Flower	Chronic fever	250 g of flower are boiled in 1.5 l of water for half an hour. Then 2 ml of it are taken in the morning and evening successively for some days.
<i>Acalypha indica</i>	Leaf	Snakebite (Cattle) Wound	Leaves are boiled with salt for half an hour and it is given to the wounded animal to eat
<i>Acalypha indica</i>	Root	Constipation	Leaves are ground well to make paste and applied on the infected areas
<i>Allium sativum</i>	Leaves	Worm attack in intestines	Roots are eaten daily after boiling
<i>Mimosa intisida</i>	Cloves Root	Chicken pox Typhoid	Juice obtained from leaves (<i>A. indica</i>) by grinding is then taken with the sap of <i>A. sativum</i>
<i>Argyrea nervosa</i>	Whole parts	Snakebite (Cattle)	After blending 3 g of dried root and 3 black peppers, it is taken to be free of chicken pox for 365 days 2 g of root are boiled in ½ l of water. When water becomes ¼ l (app.) boiling is stopped. It is screened and cooled. It is then taken everyday. All parts are ground well with water to make juice and the juice is painted all over the body of the wounded animal



Figure 5 *Alocasia indica*



Figure 6 *Tinospora cordifolia*

Acalypha indica, *Tinospora cordifolia* (Figure 6) and *Canabis sativa*. It does not mean that these species are rare all over Bangladesh; they are found sporadically. The Bangladesh National Herbarium has already identified 97 species as threatened, among them *R. serpentina* (Ghani 2003).

CONCLUSIONS

The dependency of the *Shaiji* on plants for health care showed a particular pattern of forest resource exploitation. While there is issue regarding the conservation of biological diversity all over the world, this community is using plants for their health care in a sustainable manner. They cultivate plants that seem to be rare and ultimately have developed arboretum for conserving plants. For a complete understanding of the traditional medicinal knowledge of the *Shaiji* community, chemical analysis of the respective plant parts should be undertaken. This may provide clues for the treatment of even non-curable diseases. Besides, the young generation should be motivated to acquire this traditional medicinal knowledge.

REFERENCES

- ANONYMOUS. 2005. *Trade in Medicinal Plants*. Economic and Food Agricultural Organization of the United Nations, Rome.
- BANIK, R. L. 2001. Importance of medicinal plants and its future in Bangladesh. Pp. 21–23 in Bose, S. K. & Roshetko, J. M. (Eds.) *Propagation and Cultivation of Medicinal Plants in Bangladesh*. Bangladesh Forest Research Institute, Chittagong.
- BARC (Bangladesh Agriculture Research Council). 1972–1992. *Flora of Bangladesh*. Salar, M. K. (Ed.) BARC, Dhaka.
- BMRCB (Bangladesh Medical Research Council Bulletin). 1979. Issue No 5. BMRC, Dhaka.
- CHEVALLIER, A. 1996. *The Encyclopedia of Medicinal Plants*. First edition. DK Publishing Inc., New York.
- CHOPRA, R. N., NAYAR, S. L. & CHOPRA, I. C. 1992. *Glossary of Indian Medicinal Plants*. CSIR, New Delhi.
- DAS, K. D. & ALAM, M. K. 2001. *Trees of Bangladesh*. Bangladesh Forest Research Institute, Chittagong.
- DEY, T. K. 2001. *Plants of Bangladesh*. Shetu Tuni Book House, Comilla.
- DEY, T. K. 2006. *Useful Plants of Bangladesh*. Second edition. The Ad. Communication, Chittagong.
- GHANI, A. 2003. *Medicinal Plants of Bangladesh with Chemical Constituents and Uses*. Second edition. Asiatic Society of Bangladesh, Ramna.
- IQBAL, M. 1993. *International Trade in Non-Wood Forest Products. An overview*. FAO, Rome.
- KADIR, M. H. 1990. Bangladesh flora as a potential source of medicinal plants and its conservation strategies. Pp. 73–77 in Ghani, A. (Ed.) *Traditional Medicine*. Jahangirnagar University, Dhaka.

- NEHAL, S. M. R. 2004. Kustia district. In Islam, S. (Ed.) *Banglapedia (Compact Disk)*. Asiatic Society of Bangladesh, Dhaka.
- PALEVITCH, D. 1991. Agronomy applied to medicinal plant conservation. Pp. 168–178 in Akerele, O., Heywood, V. & Synge, H. (Eds.) *Conservation of Medicinal Plants*. University Press, Cambridge.
- RAO, V. R. & ARORA, R. K. 2004. Rationale for conservation of medicinal plants. Pp. 7–22 in Batugal, P. A. et al. (Eds.) *Medicinal Plants Research in Asia. Vol. 1: the Framework and Project Work Plans*. International Plant Genetic Resources Institute (IPGRI), Kuala Lumpur.
- SCHIPPMANN, U., LEAMAN, D. J. & CUNNINGHAM, A. B. 2002. Impact of cultivation and gathering of medicinal plants on biodiversity: global trends and issues. In *Biodiversity and Ecosystem Approach in Agriculture, Forestry and Fisheries*. Satellite event on the occasion of the Ninth Regular Session of the Commission on Genetic Resources for Food and Agriculture. 12–13 October 2002, Rome.
- SETERS, A. P. V. 2003. Forest based medicines in traditional and cosmopolitan health care. Pp. 5–6 in Bodeker, G. et al. (Eds.) *Medicinal Plants for Forest Conservation and Health Care*. Non-Wood Forest Products 11. Food and Agriculture Organization of the United Nations, Rome.
- UNIYAL, R. C., UNIYAL, M. R. & JAIN, P. 2000. *Cultivation of Medicinal Plants in India*. TRAFFIC India & WWF India, New Delhi.
- WALTER, S. 2001. *Non-Wood Forest Products in Africa. A Regional and National Overview*. FAO, Rome.
- YUSUF, M., CHOWDHURY, J. U., WAHAB, M. A., & BEGUM, J. 1994. *Medicinal Plants of Bangladesh*. BCSIR, Dhaka.