GESA
GLOCAL ENVIRONMENT & SOCIAL ASSOCIATION

International Journal of Biological Innovations
http://ijbi.org.in | http://www.gesa.org.in/journals.php
https://doi.org/10.46505/IJBI.2024.61010
IJBI 6(1): 69-74 **(2024)**
E-ISSN: 2582-1032

AN OVERVIEW OF SOME MEDICINAL PLANT SPECIES COMMONLY USED AS TRADITIONAL MEDICINE IN BANGLADESH

Md. Rajib* and Iftear Kazim Rafi

Department of Pharmacy
Jahangirnagar University, Dhaka, Bangladesh

**Corresponding author*: mrajibpcy@gmail.com

Article Info:
Review Article
Received
21.03.2024
Reviewed
30.04.2024
Accepted
15.05.2024

Abstract: Medicinal herbs have been utilized since the Vedic period. Approximately 75% of people in rural areas of Bangladesh utilize traditional medicines in some capacity. Bangladesh is the home to over 10,000 different varieties of medicinal plants. The use of herbal and ayurvedic medicines predates humankind. There is substantial evidence of the historical relationship between man and his hunt for pharmaceuticals in nature, including written records, surviving monuments, and even the first plant medicines. The use of plants as a source of research in the search for active compounds for medicine has been proven to have a significant scientific output. An analysis of the scientific literature indexed in various databases concerning medicinal plants clearly shows that in the last 20 years, progress has been rapid, with a peak in the last century. Although there is a vast list of beneficial plant species for humans, this review article attempted to concentrate on describing the traditional medical applications of a few chosen plant species in Bangladesh.

Keywords: Beneficial effect, Medicinal herbs, Metabolites, Nature, Traditional medicine.

Cite this article as: Rajib Md. and Rafi I.K. (2024). An overview of some medicinal plant species commonly used as traditional medicine in Bangladesh. *International Journal of Biological Innovations*. 6(1): 69-74. https://doi.org/10.46505/IJBI.2024.61010

INTRODUCTION

Herbal medicines derived from medicinal plants are valued worldwide, yet they are rapidly vanishing. In order to offer a trustworthy resource for the conservation and sustainable use of medicinal plants, this article examines global trends, advancements, and possibilities for the strategies and approaches pertaining to these two areas. Authors focused that for the sustainable use of almost all the medicinal plant resources, due consideration should be given to both conservation methods (*e.g., in situ* and *ex situ* conservation and growing techniques) and resource management (*e.g.,* excellent farming practices and sustainable use solutions).

Biotechnical techniques such as tissue culture, micropropagation, synthetic seed technology, and molecular marker-based methods are used to increase production and alter the potency of

medicinal plants (Aziz *et al.,* 2018; Chowdhury *et al.,* 2009; Hoque *et al.,* 2023a; Tabassum *et al.,* 2024). Approximately 80% of people on the planet mostly or exclusively utilize traditional medicine (WHO, 2002). All living things across the world benefit from every aspect of the plant (Bamola *et al.,* 2018). These medicinal plants are essential to preserving human health since they are excellent suppliers of several strong and effective medications (Chakraborty, 2014; Pandey, 2019; Lal, 2022). These herbs have been used for thousands of years to treat and prevent a wide range of illnesses, including respiratory diseases, GIT problems and sexual disorder (Dogra *et al.,* 2015; Tamanna *et al.,* 2024).

The comprehension of conventional medical knowledge and close observation of nature serve as the foundation for the treatment of illnesses. *Aegle marmelos* leaves, for instance, can be used to cure deafness, conjunctivitis, jaundice, and leucorrhea. Fruits offer nourishment and vitality. The bel plant contains bioactive substances such coumarin, xanthotoxol, imperatorin, aegeline, and marmeline in its fruits, bark, leaves, seeds, and roots. These substances have antitumor, anti-inflammatory, anti-diabetic, antibacterial, and insecticidal properties (Chandra, 2013; Gurjar *et al*., 2015; Sharma and Pareek, 2021).

The most widely used search terms by the main institutions researching in this field are unclassified drugs, plant extract, and controlled study. From the study of the keywords in the period from 2009 to 2014, seven clusters have been found, those dedicated to: Traditional medicine, Drug determination, Animals *in vivo* study, Unclassified drug, Drug efficacy, Effect of extraction solvent, and Malaria. Subsequently, from the period 2015 to 2019, the clusters are reduced to five, and those focused on: Unclassified drug, Traditional medicine, Cancer, *in vivo* study, anti-diabetic activity, and Animals-anti-inflammatory activity (Zaman and Pathak, 2013; Jamkhande and Wattamwar, 2015).

Due to their large concentration of secondary metabolites, plants are thought to be the main source of chemicals with medicinal effect. All plants have chemical elements of some type, but not all of them have the ability to operate pharmacologically. The chemical components are referred to be active chemical constituents of simply constituents when they have the ability to exert pharmacological effects that influence the physiological systems of the animal body (Ghani, 2003; Hoque *et al.,* 2023b). These chemical compounds with therapeutic properties are often created by plants as byproducts or side products during the synthesis and metabolism of the major metabolites; the plants do not consume or utilize these chemical substances for their regular biological functions. These may be called as secondary metabolites. The plant's body may contain these substances in equal amounts throughout or in larger concentrations in some areas (Ghani, 2003). Given that the chemical components in plants bind to the body's receptor molecules to mediate their effects, herbal medicines function relatively similarly to conventional medications in terms of how they do their jobs. These processes are the same as those that are well-known for conventional drugs.

Tribal tracts are a repository of experience and information about the many use of flora and animals (Prakash and Verma, 2021; Jafri and Mishra, 2022). Plant products have been used for almost 5,000 years to heal illnesses and revitalize bodily systems in ancient Indian, Egyptian, Chinese, Greek, and Roman cultures. This indicates that plant products have therapeutic potential (Manzano *et al.,* 2020). Pharmacists and doctors are now better equipped to address the issues that have arisen with the expansion of professional services in the facilitation of human life, as they have developed around the use of medicinal plants and the evolution of awareness (Nishant, 2016).

With its tropical warmth, diverse seasons, and fruitful soils, Bangladesh is the home to over 10,000 different plant species. It is said that over 500 of these species have therapeutic or medicinal qualities (Ghani, 1998). A total of 85% of the country's population live in rural areas and almost 80% are more or less dependent on medicinal plants for their primary healthcare, with herbal medication remaining a popular and

accepted form of treatment (Borkatulla *et al.,* 2023). Documenting the medicinal plants linked to traditional knowledge is crucial since these resources are in danger of disappearing (Bisht *et al.,* 2013). For this reason, it is essential to conserve this traditional knowledge through recording, identification of the plant species utilized, and the manufacture of herbal remedies including the local community in the production of the most commonly used medicinal plants will be a rational approach.

TRADITIONAL USES

Medicinal plants are a valuable global source of novel pharmaceuticals. In Europe, more than 1300 medicinal plants are utilized, with 90% of them derived from wild resources; in the US, around 118 of the top 150 prescription medications have natural sources as their basis. Moreover, more than 25% of recommended medications in affluent nations are derived from wild plant species, while up to 80% of individuals in underdeveloped nations only receive basic healthcare from herbal remedies. Many ailments, including stomach ache, constipation, piles, dysentery, jaundice, diabetes, fever, asthma, menstrual problems, snake bites, and skin illnesses, are treated with medicinal plants in Bangladesh (Table 1 and 2).

Table 1: Some medicinal plants of Bangladesh and their traditional uses.

Scientific Name	Local Name (Bangla)	Traditional uses
Adhatoda vasica	Basak, Basakpata	Cough, asthma, bronchitis, pneumonia, rheumatism.
Aegle marmelous	Bael	Dysentery, diarrhea, constipation.
Aloe barbadensis	Ghritakanchan	Constipation, peptic ulcer, diabetes, asthma, burns.
Andrographis paniculata	Kalmegh, Kalomegh	Liver and spleen disorders, constipation, diarrhea, dysentery, dyspepsia.
Asparagus racemosus	Shatamuli	Urinary disorders, diabetes, jaundice, dyspepsia, diarrhea.
Azardirchata indica	Neem	Inflammation of the gum, gingivitis, fever, small pox.
Bacopa monniera	Brahmishak	Epilepsy, mental illness, indigestion, ulcer, asthma, diabetes, anemia, infertility.
Centella asiatica	Thankuni	Skin problems, digestive disorders, leprosy, dysentery.
Eclipta alba	Kesuti, Kalokeshi	Liver and eye diseases, skin diseases, itching, bronchitis, asthma.
Emblica officinalis	Amloki, Amla	Cold, cough, scurvy, palpitation, hemorrhoids, diarrhea, jaundice.
Euphorbia hirta	Bara-keru	Cough, bowel problems, asthma, bronchitis.
Lawsonia inermis	Mehedi, Mendi	Skin diseases, dandruff, sore throat, diarrhea, dysentery.
Ocimum sanctum	Tulsi	Cough, bronchitis, diarrhea, gastric disorder, itching, leprosy, earache.
Rauvolfia serpentina	Sarpagondha	Hypertension, insomnia, anxiety, insanity, epilepsy.
Ricinus communis	Bherenda	Constipation, rheumatism, paralysis, asthma, dropsy.
Terminalia arjuna	Arjun gach	Hypertension, liver cirrhosis, asthma, dysentery.
Wthania somnifera	Ashwagondha	Headache, convulsions, insomnia, cough, rheumatism, dropsy.
Xanthium indicum	Ghagra	Urinary problems, sores of mouth.
Zingiber officinale	Ada	Dyspepsia, cough, fever, headache.

Table 2: Drug name, plant source and their therapeutic use.

Drug	Plant Source	Therapeutic uses
Arecoline	*Areca catechu* Linn	Anthelmintic
Atropine	*Atropa belladonna* Linn	Parasympatholytic, Antispasmodic, Mydriatic
Caffeine	*Camellia sinensis* O. *Coffea arabica* Linn.	Stimulant analgesic
Calanolide A Calanolide B	*Calophyllum lanigerum*	AIDS
Camphor	*Cinnamomum camphora* Nees	Antipruritic, Stimulant, Antispasmodic
Cephaeline	*Cephaelis ipecacuanha* A. Rich	Emetic
Cocaine	*Erythroxylum coca* Lam.	Anesthetic, Narcotic
Codeine	*Papaver somniferum* Linn.	Analgesic, Sedative, Antitussive
Colchicine	*Colchicum autumnale* Linn.	Anti-arthritic, Anti-gout
Deserpidine	*Rauvolfia serpentina* Benth	Hypotensive, Vasodilator
Digitoxin / Digoxin	*Digitalis purpurea* Linn. *Digitalis lanata* Her	Cardiotonic
Diosgenin	*Dioscorea* spp.	Antifertility, Expectorant, Anti-inflammatory
Emetine	*Cephaelis acuminate* Karst. *Cephaelis ipecacuanha* A. Rich	Anti-amoebic
Ergametrine Ergotamine Ergotoxine	*Claviceps purpurea* (Fr.) Tul	Vasoconstrictor, Oxytocic
Hesperidin	*Citrus* spp.	Cardiovascular diseases, Hypertension
Hyoscine / Hyoscyamine	*Datura, Hyoscyamus,* *Scopolia, Dubaisia* spp.	Parasympatholytic, Antispasmodic, Mydriatic
Kellin	*Ammi visnaga* (L) Lamk	Vasodilator
Menthol	*Mentha piperita* Linn.	Anti-pruritic, Antiseptic, Stimulant
Morphine	*Papaver somniferum* Linn	Sedative, Narcotic, Analgesic
Narcotine	*Papaver somniferum* Linn	Antitussive
Ouabain	*Strophanthus gratus* Bail	Cardiotonic
Papain	*Carica papaya* Linn	Digestant
Papaverine	*Papaver somniferum* Linn	Smooth muscle relaxant
Physostigmine	*Physostigma venenosum* Balf	Parasympathomimetic, Cholinergic
Pilocarpine	*Pilocarpus jaborandi* Holm.	Parasympathomimetic, Cholinergic
Quinine / Quinidine	*Cinchona* spp.	Anti-malarial, Antipyretic
Rescinnamine / Reserpine	*Rauvolfia* spp.	Hypotensive, vVasodilator
Santonin	*Artemisia cina* Berg	Anthelmintic
Sparteine	*Cytisus scoparius* Link *Cytisus proliferus* Linn	Oxytocic; Cardiac and Respiratory stimulant
Strychnine	*Strychnoxnux vomica* Linn.	CNS stimulant
Taxol	*Taxux* spp.	Cancer chemotherapy
Theobromine	*Theobroma cacao* Linn	Diuretic, Smooth muscle relaxant
Theophylline	*Camellia sinensis* O. Kuntze	Diuretic, Smooth muscle relaxant
Vinblastine/ Vincristine	*Catharanthus roseus* G. Don	Anticancer
Vincamine	*Vinca minor* Linn *Voacanga africana* Stapf.	Vasodilator
Ajmalicine	*Rauvolfia serpentina* Benth. *Catharanthus roseus* G. Don.	Vasodilator
Berberine	*Berberis* spp. *Hydrastis canadensis* Linn.	Astringent

Thus, it's necessary to increase the understanding about the beneficial medicinal plants occur all around. Plant components such as leaves, roots, flowers, bark, fruits, and rhizomes are used medicinally. The synthesis of secondary metabolites by plants is responsible for their multiple therapeutic benefits. Agro-industrial technologies must be used for the production of herbal medicines as well as for the processing and growing of medicinal plants.

CONCLUSION

There's a belief that nature has a solution to every health issue. Many deadly diseases now afflict humanity, yet nature has shown itself capable of both preventing and healing these illnesses in the form of therapeutic plants. Approximately 70-80% of people on the planet only use traditional or herbal remedies. Herbal medicine is in high demand nowadays and is expanding globally. Unfortunately, until recently, there were relatively few trials and experiments in this field, which is indicative of ignorance of the natural world. In this context more and more research about medicinal plants is needed and thus anticipated.

REFERENCES

1. **Aziz M.A., Adnan M., Khan A.H. *et al.*** (2018). Traditional uses of medicinal plants practiced by the indigenous communities at Mohmand Agency, FATA, Pakistan. *J. Ethnobiology Ethnomedicine.* 14(2):1-16. https://doi.org/10.1186/s13002-017-0204-5.
2. **Borkatulla B., Ferdous J., Uddin A.H. and Mahmud P.** (2023). Bangladeshi medicinal plant dataset. *Data Brief.* 48:109211. 10.1016/j.dib.2023.109211.
3. **Bisht V.K., Kandari L.S., Negi J.S., Bhandari A.K. and Sundriyal R.C.** (2013). Traditional use of medicinal plants in district Chamoli, Uttarakhand India. *Journal of Medicinal Plants Research.* 7(15):918-929. 10.5897/JMPR13.2599.
4. **Bamola N., Verma Poonam and Negi C.** (2018). A Review on some traditional medicinal plants. *International Journal Life Sciences Scientific Research.* 4(1):1550-1556. 10.21276/ijlssr.2018.4.1.7.
5. **Chowdhury M.S.H., Koike M., Muhammed N., Halim M.A., Saha N. and Kobayashi H.** (2009). Use of plants in healthcare: A traditional ethno-medicinal practice in southeastern rural areas of Bangladesh. *International Journal of Biodiversity Science and Management.* 5(1): 41-51. https://doi.org/10.1080/17451590902771342.
6. **Chandra M.** (2013). Antimicrobial activity of medicinal plants against human pathogenic bacteria. *International Journal of Biotechnology and Bioengineering Research*. 4(7): 653-658.
7. **Chakraborty B.K.** (2014). Status of diversify of medicinal plants in floodplain basin of northern Bangladesh. *Journal of Crop and Weed*. 10(2):196-204.
8. **Dogra K.S., Chauhan S. and Jalal J.S.** (2015). Assessment of Indian medicinal plants for the treatment of Asthma. *Journal of Medicinal Plants Research*. 9(32):851-862. 10.58971/JMPR2015.5890.
9. **Ghani A.** (1998). Medicinal plants of Bangladesh chemical constituents and uses. 1st Edition. Asiatic Society of Bangladesh.
10. **Ghani A.** (2003). Medicinal Plants of Bangladesh: Chemical Constituents & Uses, 2nd Edition, Asiatic Society of Bangladesh., Dhaka, pp. 1-16.
11. **Gurjar P.S., Lal N., Gupta A.K. and Marboh E.S.** (2015). A review on medicinal values and commercial utility of Bel. *Int. J. Life Science Scientific Research*. 1(1):5-7.
12. **Hoque M., Rafi I.K. and Hossain M.S.** (2023a). *Centella asiatica*: A mini review of its medicinal properties and different uses. *World Journal of Advanced Research and Reviews.* 19(2): 1185-1191. https://doi.org/10.30574/wjarr.2023.19.2.1699.
13. **Hoque M., Rahman M.M., Uddin M.N.** (2023b). A study of analgesic effect of medicinal plant *Ficus heterophylla* in Swiss albino mice. *World Journal of Advanced Research and Reviews.* 19(03): 516-523. https://doi.org/10.30574/wjarr.2023.19.3.1804.

14. **Jafri Z.H. and Mishra S.** (2022). Some Ethnoveterinary Medicinal Plants used among Tribals of Satpura range Burhanpur of M.P., India. *International Journal of Biological Innovations*. 4(1): 71-76. https://doi.org/10.46505/IJBI.2022.4107.

15. **Jamkhande P.G. and Wattamwar A.S.** (2015). *Annona reticulata* Linn. (Bullock's heart): Plant profile, phytochemistry and pharmacological properties. *Journal of Traditional & Complementary Medicine.* 5(3):144-152. 10.1016/j.jtcme.2015.04.001.

16. **Lal Mohan** (2022). Floristic diversity and Ethnobotany of Family Asteraceae of District Bhiwani (Haryana), India. *International Journal of Biological Innovations*. 4(1): 113-120. https://doi.org/10.46505/IJBI.2022.4112.

17. **Manzano S.E., Garrido-Cardenas J.A. and Manzao A.F.** (2020). Worldwide research trends on medicinal plants. *International Journal of Environmental Research and Public Health*. 17:3376. 10.3390/ijerph17103376.

18. **Nishant P.** (2016). Role of medical plants (Brahmi and Ashwagandha) in the treatment of Alzheimer's disease. *Int. J. Life Science Scientific Research*. 2 (1):15-17.

19. **Prakash S. and Verma A.K.** (2021). Relevance of Ethnomedicines of Invertebrate origin used by Tribals at Indo-Nepal Border. *International Research Journal of Biological Sciences*. 10(1): 36-39.

20. **Pandey H.P.** (2019). Socio-religious Plants of Terai Region of U.P., India. *International Journal of Biological Innovations.* 1(1): 18-22. https://doi.org/10.46505/IJBI.2019.1104.

21. **Sharma N. and Pareek A.** (2021). Ethnobotanical properties of plants used by the rural community of Dausa District of Rajasthan, India. *International Journal of Biological Innovations.* 3 (1): 179-185. https://doi.org/10.46505/IJBI.2021.3118

22. **Tabassum N., Hasan M.R., Mim M.S. *et al.*** (2024). Ethyl acetate extract of *Annona reticulata* Linn.: An assessment of its cytotoxicity and antioxidant properties. *International Journal of Research*. 11(3):95-105. https://doi.org/10.5281/zenodo.10802687.

23. **Tamanna A.J., Saha A., Hoque M. *et al.*** (2024). Evaluation of phytochemical screening, antioxidant, and thrombolytic activity of Methanolic extract of *Phlogacanthus thyrsiflorus. South Asian Res J Pharm Sci.* 6(1): 5-11. 10.36346 /sarjps.2024.v06i01.002.

24. **WHO** (2002). Traditional medicine strategy 2002-2005. World Health Organization, Geneva, Switzerland.

25. **Zaman K. and Pathak Kalyani** (2013). Pharmacognostical and Phytochemical studies on the leaf and stem bark of *Annona reticulata* Linn. *Journal of Pharmacognosy and Phytochemistry*. 1(5): 1-7.