J. Pharm. Res. 2025;24(4):212-215

Print ISSN: 0973-7200
Online ISSN: 2454-8405

Journal of Pharmaceutical Research

ORIGINAL ARTICLE

Floristic Elements Depletion at Eastern Uttar Pradesh, India with Special Reference to the Threatened Medicinal Flora

C P Shukla[1], Sanjib Bhattacharya[2], Pallab K Haldar[3*]

[1]*National Medicinal Plants Board, Ministry of AYUSH, Govt. of India, New Delhi 110001, India*
[2]*West Bengal Medical Services Corporation Ltd., GN 29, Sector V, Salt Lake, Kolkata 700091, West Bengal, India*
[3]*School of Natural Product Studies, Jadavpur University, Kolkata 700032, West Bengal, India*

ARTICLE INFO

Article history:
Received 13-11-2025
Accepted 23-12-2025
Published 30-12-2025

** Corresponding author.*
Pallab K Haldar
pallab_haldar@rediffmail.com

https://doi.org/10.18579/jopcr/v24.i4.155

ABSTRACT

Largely plant-based, traditional medicinal systems continue to provide primary healthcare to more than three-quarters of the world's population. Plant-derived medicines are used in all cultures and, as such, plants have always played a key role in healthcare. Traditional medicines are widely used across India. Scientific knowledge of these uses varies with some regions, such as Eastern Uttar Pradesh state, India, being less reported. The plants being used are increasingly threatened by a variety of pressures and are being categorized for conservation management purposes. The present study describes the floristic elements depletion of Prayagraj district, Uttar Pradesh, India, with special reference to the threatened and endangered medicinal plant species. Altogether, 27 such floral species have been recorded in this study, facing different levels of threats of the genera - *Asparagus, Argyreia, Ceropegia, Chlorophytum, Costus, Gloriosa, Rauvolfia, Urginea* etc., which are in immediate danger of extinction and need protection and rehabilitation.

Keywords: Biodiversity, Threatened flora, Traditional medicine, Prayagraj

INTRODUCTION

The word 'biodiversity' is a contraction of biological diversity which refers to variety within living world. It includes species, as well as varieties found within same species, and also enormous rage of ecosystem and habitat, forest, grasslands, the ocean and its depths, peat and peat bogs [1]. The species level is generally regarded as most natural one at which to consider whole organism diversity. Therefore, the number of biological types constitutes the degree of diversity. Floral diversity is one of the two components of biodiversity and plays very important role to compose the various habitats [2]. India, a large country, is very rich in floristic diversity. Conserving biodiversity is a difficult undertaking owing to several challenges which the plants also face. The Red Data Book of Indian Plants categorized 602 vascular plants as vulnerable in 1987–1990; by 2003, that number had risen to 1255 and by 2020, it had risen to 2152, indicating the potential threat to the floristic elements of India [3].

Traditional and herbal medicines have widely been used across India especially at semi-urban and rural places [4]. Scientific knowledge of these uses varies with some regions, such as the Eastern Uttar Pradesh state of the northern India, being less well known and reported so far. Some of the plant species which were abundant in Prayagraj district, Uttar Pradesh, India about half a century ago, as per the Uttar Pradesh state Forest Department's record; have at present become rare or very rare due to over exploitation/urbanization and have fallen in the different categories of threatened species. Such plant species whose different parts viz. roots, rhizome, bark, seeds etc. are of medicinal importance deserve maximum attention for their protection as indiscriminate exploitation of such species has adversely affected their natural population in the prevailing forests. It has become therefore necessary to prepare a ratified list of higher medicinal plant species which are in immediate danger of extinction and need protection/rehabilitation. On this basis, the present study attempted a survey carried out in Prayagraj District of Uttar Pradesh state, India.

METHODS

The present work is based on the theory that the simplest index of diversity is the total number of species found in a given area. For this survey, the rich vegetative areas of Prayagraj District, Eastern Uttar Pradesh, India were prospected and the data pertaining to the extant medicinal plants were collected with the help of the local inhabitants and authenticated by the competent technical personnel of the state Forest Department of Prayagraj District, Uttar Pradesh, India Fig. 1 during March 2024 to June 2025 [5]. The reliability of the collected information, especially folkloric/ethno-medicinal use was further verified by repeated inquiries to the locally practicing traditional healthcare professionals namely Vaidyas, Hakims and Kavirajs, some important authentic medicinal literatures were also consulted to make the gathered information more appropriate and corroborative [6, 7].

RESULTS AND DISCUSSION

On the basis of floristic resources survey carried out in Prayagraj District, Uttar Pradesh, India, by the present authors, 27 numbers of higher medicinal plant species have fallen in the endangered category; which are enumerated in Table. 1 with their ethno-medicinal uses prevalent in the region of study Fig. 1. It is evident from the present study that, Prayagraj, Eastern Uttar Pradesh of northern India has a diverse flora and its play a vital role in the livelihoods of local people including their basic healthcare needs. However, over exploitation of some medicinal floral species such as *Asparagus racemous, Argyreia speciosa, Ceropegia hirsuta, Chlorophytum arundinaceum, Costus speciosa, Gloriosa superba, Rauvolfia serpentina, Urginea indica* etc. caused serious damage to the normal population of these species in the study area. The biotic interferences like grazing in forest, filling of wetlands, deforestation, urbanization, etc. have led to the gradual loss of habitat as well as species diversity [8]. On the other hand, modernization of ethnic society and acculturation are threatening the age-old herbal therapy options. It is, therefore, the over-exploited species and the traditional herbal heritage of ethnic societies of the district are called for protection thereof. The findings of the present study are in agreement with those of the other regional flora of India [9, 10]. Many of the common species are recorded in the zone, including invasive alien species and weeds which are well adapted for a long time to the varied environmental conditions [11].

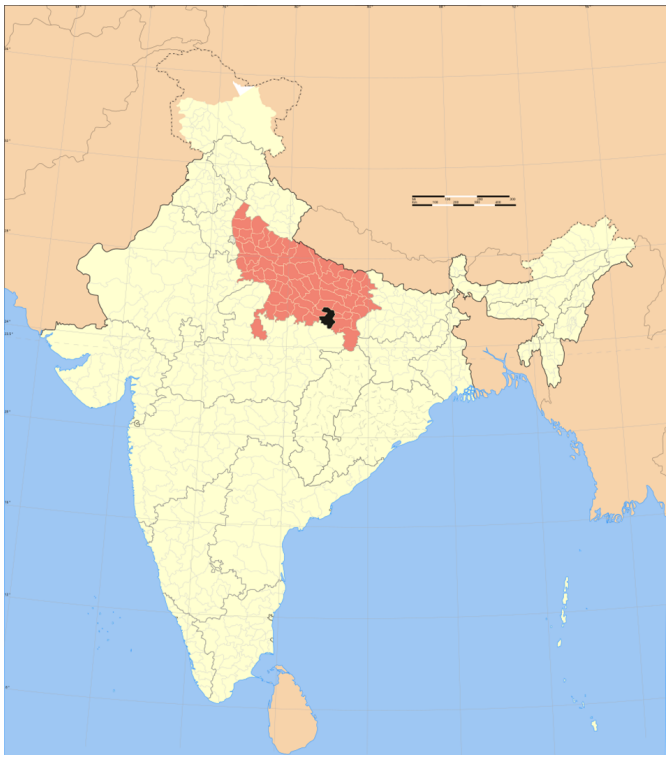

Fig. 1: Study area- Prayagraj district (highlighter blue-black) in Uttar Pradesh State (highlighted in maroon) of India

Table 1: Threatened medicinal floristic elements of Prayagraj district, Eastern Uttar Pradesh, India

Sl. No.	Botanical name	Family	Ethno-medicinal uses
1.	*Asparagus racemosus* Wilid.	Liliaceae	**Root:** to promote lactation in women **Shoot:** epilepsy, weakness.
2.	*Abrus precatorius* Linn.	Fabaceae	**Seed paste:** applied in baldness. **Leaf paste:** swelling, wounds.
3.	*Argyreia speciosa* Sweet	Convolvulaceae	**Root powder:** leucorrhoea. **Leaf:** wound and swelling.
4.	*Costus speciosus* Sm.	Costaceae	**Rhizome powder:** cardiac problems, wound, debility.
5.	*Cissampelos peraria* Linn.	Menispermiaceae	**Root powder:** piles, diarrhea.
6.	*Curcuma aromatica* Salisb.	Zingiberaceae	**Rhizome paste:** swelling and strike; skin diseases, leprosy, rheumatism.
7.	*Ceropegia hirsuta* Wt. & Arn.	Asclepiadaceae	**Tuber:** dysentery and diarrhea.
8.	*Cryptolepis buchananii* Roem.	Periplocaeae	**Root:** fits and faints, hysteria **Latex:** rheumatism
9.	*Chlorophytum arundinaceum* Baker.	Liliaceae	**Root:** impotency, debility, leucorrhoea.
10.	*Dioscorea bulbifera* Linn.	Dioscoreaceae	**Tuber paste:** rheumatism, bone problems
11.	*Dioscorea alata* Linn.	Dioscoreaceae	**Tuber:** blood dysentery, diarrhea.
12.	*Dioscorea esculenta* Linn.	Dioscoreaceae	**Tuber:** external swelling.
13.	*Dendrophtho falcate* Etting.	Loranthaceae	**Leaf:** menstrual problems, swelling.
14.	*Gloriosa superba* Linn.	Liliaceae	**Root:** rheumatoid arthritis, wound, sores.
15.	*Gymnema sylvestre* Schult.	Asclepiadaceae	**Leaf powder:** diabetes **Leaf paste:** wound and swelling. **Bark:** phlegm
16.	*Hemidesmus indicus* Linn.	Periplocaeae	**Root:** skin disease, leucorrhoea, wound.
17.	*Helicteres isora* Linn.	Sterculiaceae	**Fruit:** colitis, diarrhea **Seed:** otorrhoea
18.	*Ichnocarpus isora* Linn.	Apocynaceae	**Leaf decoction:** fever. **Root:** anti-dysenteric, hypoglycemic
19.	*Muccuna pruriens* Linn.	Papilionaceae	**Root:** flatulence, cystitis.
20.	*Oroxylum indicum* Vent.	Bignoniaceae	**Seed:** earache, ear swelling **Bark:** acute rheumatism **Leaf decoction:** digestive disorders **Root decoction:** dropsy
21.	*Rivea hypocrateriformis* Choisy.	Convolvulaceae	**Plant juice:** plies **Plant paste:** wound and scorpion sting.
22.	*Rauvolfia serpentina* Benth.	Apocynaceae	**Root:** high blood pressure, hysteria, insomnia
23.	*Rauvolfia tetraphylla* Linn.	Apocynaceae	**Root:** high blood pressure, insanity.
24.	*Urginea indica* Kunth.	Liliaceae	**Bulb:** piles, pain, chronic cough.
25.	*Vitex negundo* Linn.	Verbenaceae	**Leaf paste:** swelling, rheumatism **Leaf smoke:** headache **Leaf decoction:** malarial fever.
26.	*Withania somnifera* Dunal.	Solanaceae	**Root:** body pain, wound, cough, menstrual trouble
27.	*Zingiber zerumbet* Smith.	Zingiberaceae	**Rhizome:** cough, warm, leprosy, pimples

CONCLUSION

Biodiversity is a short term commonly used to describe the number, variety, and variability of living organisms. In the present investigation, the authors have identified and reported 27 medicinally important floral species (with folkloric medicinal usage thereof) which are at the different levels of threats due to over exploitation/over harvesting for various purposes by the local people as well as by the industrialization/urbanization. This information with ethnomedicinal knowledge thus collated may serve as primary reference material for future researchers/chroniclers. As a result, they are on the verge of extinction, if adequate steps are not taken to protect them

very soon, these species would disappear from this area together with their medicinal usage obviously in due course of time [12]. The flora are important components of any ecosystem and influencing up to large extant to each other with a direct impact on the habitats and inhabitants including their dietary and basic healthcare needs leading to their later possible exploitation in contemporary medicine [13]. Hence, the floral diversity depletion is a major cause of the biodiversity depletion in this area too. If these are not conserved/rehabilitated, the future world would find only the edible crop plants.

ACKNOWLEDGEMENT

The authors are grateful to the local people and traditional healers of Prayagraj district, Uttar Pradesh, India and staff of the state Forest Department, Uttar Pradesh for sparing their time and assistance in surveying and collecting the specimens during the courses of this investigation. The authors are also thankful to the National Medicinal Plants Board, Ministry of AYUSH, New Delhi, Govt. of India, for providing technical supports.

Funding

None.

Conflict of interest

The authors declare no conflicts of interest.

References

1. Rao RR. Biodiversity in India (Floristic Aspects), Bisen Singh Mahendra Pal Singh, Dehra Dun, 1994.
2. Sathyakumar S. Bibliography on the Fauna and Micro flora of the Indian Himalayan Region, ENVIS Bulletin: Wildlife and Protected Areas, Vol. 17, Wildlife Institute of India, Dehradun, 2016.
3. Gowthami R, Sharma N, Pandey R, Agrawal A. Status and consolidated list of threatened medicinal plants of India. *Genetic Resources and Crop Evolution*. 2021; 68 (6) :2235-2263 . Available from: https://doi.org/10.1007/s10722-021-01199-0
4. Adhikari PP, Paul SB. History of Indian traditional medicine: a medical inheritance. *Asian Journal of Pharmaceutical and Clinical Research*. 2018; 11 (1) :421-426 . Available from: https://doi.org/10.22159/ajpcr.2018.v11i1.21893
5. Pielou EC. Ecological Diversity, John Wiley & Sons, New York, 1975.
6. Mabberley DJ, The plant Book: A Portable Dictionary of Plants, their Distribution and Uses, Cambridge University press, Cambridge, 2008.
7. Shukla CP. Scenario of climate changed and medicinal plant diversity: A holistic approach, In: Climate change: An Impact on Biodiversity, edited by Kumar M and Goyal AK, Biotech Books, New Delhi, 2017, 273-279.
8. Bridge BG. Global Biodiversity, Status of Earth's Living Resources; the World Conservation Monitoring Center, Chapman and Hall, Landon, 1992.
9. Haines HH. The Botany of Bihar and Odisha, Bisen Singh Mahendra Pal Singh, Dehra Dun, 1978.
10. Bhattacharya, S. Cultivation of Essential Oils. *Essential Oils in Food Preservation, Flavor and Safety*. 2016; 1st Ed :19-29 . Available from: https://doi.org/10.1016/b978-0-12-416641-7.00003-1
11. Rawat DS, Tiwari JK, Tiwari P. Invasive alien flora of western Ramganga valley, Uttarakhand. Phytotaxonomy 2016; 16: 111- 114.
12. Bhattacharya S. Antineoplastic potential of *Trichosanthes dioica* Root: A treatise. *Indian Journal of Natural Products and Resources*. 2023; 14 (2) :202-209 . Available from: https://doi.org/10.56042/ijnpr.v14i2.1161
13. Roy MB, Bhattacharya S, Debnath M, Ghosh N. Development and Standardization of a New Ayurvedic Formulation from *Barringtonia acutangula* leaf. *Current Trends in Biotechnology and Pharmacy*. 2025; 19 (4) :2676-2683 . Available from: https://doi.org/10.5530/ctbp.2025.4.46