



Biospectrum Horizons:
A Journal of Life Science Research (JASLSRI)
(An international peer-reviewed journal)
Email: editorinchief@jaslsri.org
Website: www.jaslsri.org
ISSN Online: 3139-1524



THE MORNING GLORY'S MEDICINAL TREASURE: AN ETHNOBOTANICAL INVENTORY OF FAMILY CONVULVACEAE IN UTTAR PRADESH, INDIA.

Dr. Jaswinder Kaur*

Department of Botany, Government Degree College Sirathu, Kaushambi, U.P.

**Corresponding author email: dr.jaswindr.gdc@gmail.com*

Received: 15 February 2026, Revised: 28 April 2026, Accepted: 15 May 2026, Available Online: 30 June, 2026

<https://doi.org/10.5281/zenodo.21077975>

Abstract

Although the Convolvulaceae family is home to ornamental and agricultural species, ethnomedicinal knowledge accumulated in Uttar Pradesh, India largely goes undocumented. This study was conducted to systematically document the medicinal species of Convolvulaceae in Uttar Pradesh, documenting their botanical identity, vernacular names, habitats, and therapeutic applications. A widespread field survey took place in multiple districts of Uttar Pradesh between May 2015 and March 2021. Data were collected using field observations and interviews with local residents. Plant specimens were collected, identified, and deposited in the Duthie Herbarium. The research recorded 28 medicinal plant species from 12 genera. The genus *Ipomoea* was the most abundant (13 species). Leaves and the whole plant were the most commonly used elements, mostly for making pastes, juices or decoctions to treat a broad range of more than 50 ailments. An initial conservation assessment showed that 32% of these species are of High conservation priority due to rarity and overharvesting. This study makes the first combined ethnobotanical knowledge on the Convolvulaceae family of the Uttar Pradesh state which is regarded as vital in local traditional medicine and highlights the importance of conservation, and ongoing pharmaceutical study.

Keywords: Ethnobotany, Medicinal Plants, Convolvulaceae, Uttar Pradesh, Traditional Knowledge, Conservation

1. Introduction

The Convolvulaceae, or morning glory family, is a cosmopolitan group comprised of approximately 59 genera with 1,900 species of herbs, shrubs, trees, and climbers (Staples, 2012; Wood *et al.*, 2022). This family is abundant in India but the ethnomedicinal wealth is underexplored in a systematic way, especially in the biodiverse state of Uttar Pradesh. Although plants such as *Ipomoea batatas* (sweet potato) carry economic value, and some are ornamental (Srivastava, 2017; Thomas & Divya, 2019; Kaur *et.al*, 2016; Kaur, 2019), most are classified as weeds which obscures their therapeutic potential. Previous pharmacological studies in the Convolvulaceae have also reported the existence of secondary metabolites with useful activity such as ergot alkaloids, resin glycosides and phenolic compounds with purgative, psychotropic, anti-diabetic and anti-inflammatory properties (Chen *et al.*, 2018; Yadav *et al.*, 2018). However, a large gap exists in the pharmacological potential and the recorded traditional knowledge in key parts of UP. Hence, the aim of this study was to (1) create a comprehensive inventory of the medicinal species of the members of the Convolvulaceae, in Uttar Pradesh; (2) to describe in detail the ethnomedicinal use of Convolvulaceae members in preparation and used plant parts and (3) to analyse the results of the study to identify conservation and future research opportunities, in an attempt to connect traditional use and scientific substantiation.

2. Materials and Methods

Study Area

The study took place in Uttar Pradesh state in northern India between 23°52'N to 31°28'N latitude and 77°30'E to 84°39'E longitude. It is characterized by the rich and diverse flora of the state including the Gangetic plains, Shiwalik hills, and Vindhyan range and a humid subtropical climate.

Ethnobotanical Data Collection and Plant Identification

Field surveys were carried out from May 2015 to March 2021. All participants provided their prior informed consent (PIC). Information about local names, medicinal uses, plant parts used, and methods of preparation was collected using semi-structured interviews and observations. Floral specimens were collected, recognized using standard floras (Duthie, 1903-1929; Singh *et al.*, 2016) and were housed in the Duthie Herbarium, Department of Botany, University of Allahabad, Prayagraj for future reference.

An assessment of Conservation Urgency (CU) value was prepared individually for each species following IUCN standards based on field observations concerning population abundance, geographical distribution, and any visible pressure from collection. Based on these observations we categorized each species characterized as:

High: For species with low occurrence frequency with distinct habitat preference and/or those facing intense collection pressure.

Medium: For relatively common species, with restricted distribution or experiencing high pressure of exploitation.

Low: For extensive, abundant, invasive-prone species, or cultivated species which are not at immediate risk.

3. Results and Discussion

This investigation comprehensively documents and assesses the traditional medicinal uses of the Convolvulaceae family within Uttar Pradesh, elucidating a extensive and diverse resource of cultural knowledge focused on 28 species from 12 genera.

Taxonomic Diversity and Dominant Genera

Analysis of Botanical stock showed that there were 28 medicinally important species in Uttar Pradesh (Table 1). The genus *Ipomoea* accounted as the one among most responsible with 13 species (46.4 % of the total, which was consistent with its global recognition as the largest genus in the family) (Staples, 2012). The subsequent most represented genera were *Evolvulus*, *Merremia*, *Cuscuta*, and *Camonea*, each comprising two species. The remaining genera such as *Convolvulus*, *Cressa*, *Operculina*, *Poranopsis*, *Rivea*, and *Xenostegia* each had only single species. The plants in the reported record showed a great variation in their growth characteristics, from robust lianas (*Operculina turpethum*) to climbers (*Argyreia nervosa*) to prostrate herbs (*Evolvulus nummularius*), erect shrubs (*Ipomoea carnea*), and parasitic twiners (*Cuscuta* spp.), suggesting the family was highly adaptable to the environment.

Spectrum of Therapeutic Applications

The therapeutic uses of the documented species cover a remarkably wide spectrum of over 50 ailments, categorized into several major groups (see **Figure 1**):

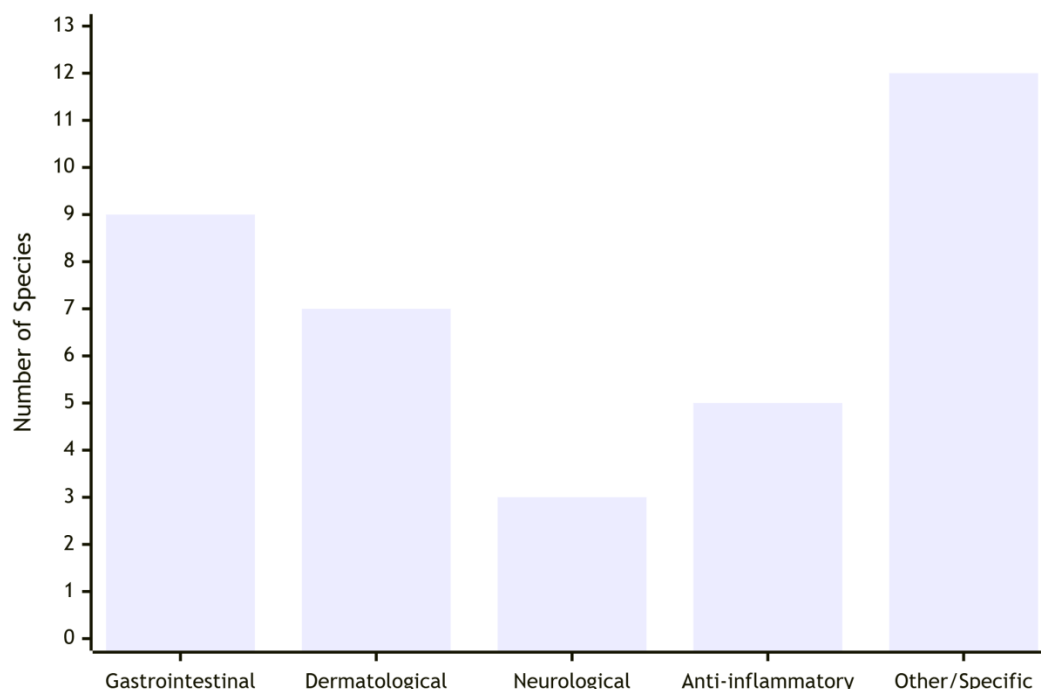


Figure 1. Number of documented Convolvulaceae species used for major ailment categories in traditional medicine of Uttar Pradesh. The "Other/Specific" category includes uses for asthma, urinary problems, sterility, and fever, among others. Species can have multiple uses.

- **Neurological and Cognitive Health:** Brain tonics like *Convolvulus prostratus* and *Evolvulus alsinoides* (also called vernacular Shankhpushpi) are used in local traditional medicine to enhance memory and intellect. Interest in this application has been increased due to the documented neuroactive compounds within the family. (Chen *et al.*, 2018).
- **Gastrointestinal Disorders:** A significant number of species are used as purgatives and for treating dysentery. As an example, *Ipomoea aquatica* and *Operculina turpethum* are used as purgatives and emetics; *Evolvulus nummularius* is specifically used for amoebic dysentery.
- **Dermatological Treatments:** Leaf paste for skin ailments is common practice. Species such as *Ipomoea obscura* and *Poranopsis paniculata* are known to be used directly on sores, cuts, and wounds, indicating their antimicrobial and wound-healing properties.
- **Anti-inflammatory and Analgesic Uses:** Pain and inflammation-related treatment: Some plants are used for pain and inflammation. For instance, warm leaves of *Argyreia nervosa* are used for knee pain, *Camonea umbellata* for rheumatic pain and headaches.
- **Cultural and Gender-Specific Uses:** The culturally oriented uses were noted as well as significant applications which included the use of *Ipomoea sagittifolia* (Lakshmana) for female sterility and bestowing a male child and the use of *Cuscuta chinensis* seeds for improving sperm health, thus showcasing the extent of the cultural embedment of this ethnobotanical knowledge.

Plant Part Utilization and Preparation Methods

Based on the plant parts used, leaves were considered most preferred (39.3% of species), however the whole plant is also preferred (32.1%) as seen in Figure 2. This preference is common in ethnobotany, because its leaves are often high in bioactive compounds, meaning that they can be harvested without having to destroy the plant (with the exception of roots or the whole plant) (Srivastava, 2017). Preference for paste (for topical application), juice, and decoction were the main preparation methods used (oral consumption). But relying on the whole plant for almost a third of the species creates serious conservation considerations, as this process is not sustainable for wild populations.

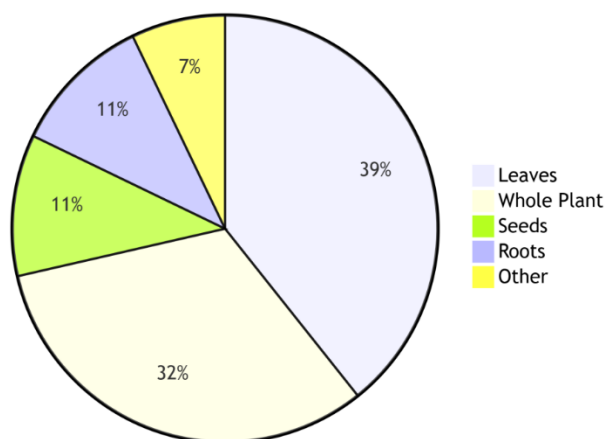


Figure 2. Frequency of plant parts used in traditional medicinal preparations. Leaves were the most predominantly used part, followed by the whole plant.

Conservation Urgency: A Critical Assessment

It was seen that 9 of the 28 species (32%) are High conservation priority on the preliminary conservation analysis. These are botanically rare species, notably *Camonea umbellata* and *Poranopsis paniculata*, and therapeutically valuable species that are destructively harvested, including *Convolvulus prostratus* and *Operculina turpethum* (whole plant and roots, respectively). The High priority status of *Ipomoea violacea* and *I. sagittifolia* further highlights the threat to species of particular medicinal or cultural significance.

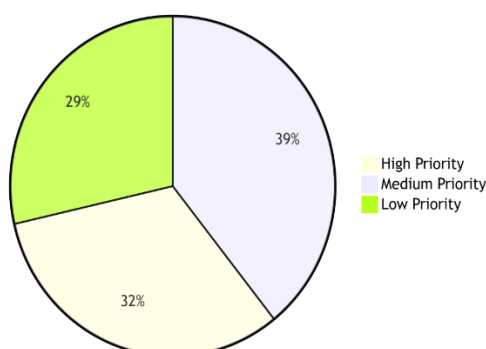


Figure 3. Proportional distribution of the 28 documented Convolvulaceae species in Uttar Pradesh based on preliminary Conservation Urgency assessment. Thirty-two percent (9 species) were identified as requiring high-priority conservation action.

Figure 3. Using a preliminary assessment of Conservation Urgency to determine how to most effectively conserve the 28 species of the family Convolvulaceae found in Uttar Pradesh, we found that 32% of them need immediate attention because their population has declined significantly (9 out of 28 species). Of the remaining 39% (11 species), some are experiencing localized pressure from collection or have limited geographic ranges; however, their populations remain stable overall. Because the other 29% of the species (8 species) are either very abundant, are problematic weeds, or have significant horticultural uses (e.g. *Ipomoea aquatica*, *I. batatas*), they will continue to do well under current collection conditions without being threatened by over-harvesting. This assessment has provided information as to which species do not appear to be in jeopardy and which ones require conservation measures, and it has also formed a foundation for the development of conservation measures targeted at extremely threatened species. For species that are at risk, possible conservation strategies include encouraging sustainable harvesting practices (such as only harvesting leaves rather than uprooting the entire plant), initiating cultivation projects for species of medicinal importance, and protecting critical habitats to help maintain ecological balance. The results of this assessment provide a basis for conservation planning in order to protect both biodiversity and the communities that utilize these plants.

Table 1: Medicinal plants of family Convolvulaceae in Uttar Pradesh with Conservation Urgency

S. No.	Species	Vernacular Name	Habitat	Parts Used	Medicinal Uses	Conservation Urgency
1.	Argyreia nervosa (Burm.f.) Bojer	Samandar-sok and samandar-kapat, Ghiabel	Climber	Leaves	Tonic; for intellect, warmed leaves for knee pain	Medium
2.	Camonea umbellata (L.) A. R. Simoes & Staples	Yellow merremia	Climber	Whole plant	Diuretic; for rheumatic pain and headache.	High
3.	Camonea vitifolia (Burm. f.) A. R. Simoes & Staples	Naval-susarini	Twinner	Whole plant	Cure for urethral discharges; cooling and diuretic agent.	High
4.	Convolvulus prostratus Forssk.	Sank-huti, Shankhpushpi	Prostrate herb	Whole plant	Brain tonic, hair tonic, anthelmintic, dysentery, skin diseases, high BP, fractures.	High
5.	Cressa cretica L.	Rudravanti, Rudranti	Erect herb	Leaves	Used in asthma.	Medium

6.	Cuscuta chinensis Roxb.	Amarbel	Parasitic twinner	Seeds	Improving sperm health.	Medium
7.	Cuscuta reflexa Roxb.	Akasbel, Amarbal	Parasitic twinner	Whole plant	Body pains and itchy skin.	Low
8.	Evolvulus alsinoides (L.) L.	Shankhpushpi, Vishnugandhi	Herb	Whole plant	Vermifuge, anthelmintic and anti-inflammatory, improve memory	High
9.	Evolvulus nummularius (L.) L	Safed-shankhpushpi, Musakan,	Prostrate herb	Whole plant	Amoebic dysentery.	Medium
10.	Ipomoea alba L.	Dudhiakalmi	Vine	Whole plant	Antibacterial, purgative, emetic, snakebite, blood purifier, dermatitis, headache.	Medium
11.	Ipomoea aquatica Forssk.	Kalmi, Karemu, Nari, Kalmisag, Narika saag, Kurmi	Vine	Plant-juice, Buds	Emetic, purgative, piles, body weakness, nervous disorder, ringworm.	Low
12.	Ipomoea batatas (L.) Lam.	Mitha-aalu, Shankerkandi, Sakarkand, Shakarkandi	Climber	Roots, Leaves	Laxative, anti-inflammatory, aphrodisiac, astringent, bactericide and fungicide, for asthma, bug-bites, burns, fever, diarrhoea, nausea, splenosis, renosis, stomach distress, tumors, whitlows.	Low
13.	Ipomoea cairica (L.) Sweet	Panjpani-poti-aal, Giriya-val, Chatribel	Climber	Flowers, leaves, Seeds	Anticancer properties, body rashes, purgative.	Low
14.	Ipomoea carnea Jacq. ssp. fistulosa (Mart. ex Choisy) D. Austin	Behaya, Besharam, Nirlajja	Shrub	Leaves	Purgative, stimulant.	Low
15.	Ipomoea eriocarpa R. Br.	Boota, Nakhari,	Twinner	Whole Plant	Rheumatism, epilepsy, leprosy, ulcers.	Medium

16.	Ipomoea nil (L.) Roth.	Kaladana, Nilpushpa, Neelkalmi, Krishnabija	Climber	Seeds	Purgative, anti-inflammatory, carminative, depurative, scabies, vermifuge, constipation, dyspepsia, bronchitis, other skin diseases.	Low
17.	Ipomoea obscura (L.) Ker Gawl.	Pan-bel, Laksmana,	Vine	Leaves	Paste applied on sores, cuts, and wounds.	Low
18.	Ipomoea pes-tigridis L.	Panch-patri, Panchpatia,	Vine	Roots	Purgative, treatment of boils, carbuncles, antidote to dog-bites, snakebite and scorpion bite	Medium
19.	Ipomoea purpurea (L.) Roth	Kaphlagla	Climber	Seeds	Treatment of oedema, oliguria, ascariasis, constipation	Low
20.	Ipomoea quamoclit L	Longlata, Kamlata, Ganesh vel, Kamini, Jamlata	Climber	Leaves , Whole plant	Bleeding piles, blood dysentery, body weakness, carbuncles	Low
21.	Ipomoea violacea L.	Heavenly blue	Vine	Roots	Diuretic, laxative, expectorant, for coughs.	High
22.	Ipomoea sagitti folia Burm.f.	Lakshmana, Manjika, Hanumann Vel	Vine	Whole plant	Culturally significant for bestowing male child, treating women sterility.	High
23.	Merremia emarginata (Burm. f.) Hallier f.	Mushkani, Musakani, Musakari, Krishna-Brahmi	Prostrate herb	Leaves	Urinary afflictions, worms, fever, gastric problems, migraine, headache, rat and snake bites.	Medium
24.	Merremia hederacea (Burm. f.) Hallier f.	Ivy woodrose	Twinning/ Prostrate	Leaves	Poultice to heal chapped hands and feet.	Medium
25.	Operculina turpethum (L.) Silva Manso	Dudhia, Tidhara, Nishoth, Pipal pant	Robust climber	Roots, Stem	Purgative to balance humors and reduce fevers.	High
26.	Poranopsis paniculata	Bel-kamu, Safed-bel,	Lianas	Leaves	Paste applied on sores.	High

	(Roxb.) Roberty					
27.	Rivea hypocrateriformis (Desr.) Choisy	Phang	Lianas	Leaves	Treatment of piles.	Medium
28.	Xenostegia tridentata (L.) Austin & Staples	Prasarani	Twinn r/ Prostrat e	Whole plant	Renal function, urinary problems, hemiplegia, gripe, malarial fever.	Medium

4. Conclusion

The plant families within the Convolvulaceae family are providing medicinal food to residents of Uttar Pradesh, each with 28 species having a substantial role in community health systems. The dominance of the genus Ipomoea and the large quantity of leaves and whole plants used in traditional practices has also been confirmed. However, there is an urgent need for caution in these results. 32% of the species documented are threatened with extinction, and are classified as requiring immediate conservation efforts. Overexploitation and loss of habitats are the main causes of these threats, and the greatest for those species that are heavily exploited. To protect these valuable plants, we must first isolate and conserve the most threatened and heavily used species. Sustainable harvesting practices must also be encouraged, and their medicinal properties scientifically verified to provide a foundation for more sustainable uses long term. Furthermore, preservation of the dwindling amount of traditional knowledge regarding these plants must be accomplished through documentation of traditional uses. Through highlighting the Convolvulaceae family as providing “the medicinal treasure”, this project will contribute to sustainable uses of the family as well as provide a scientific basis for their continued use and preservation of the biodiversity and cultural heritage of the community, for generations to come.

Acknowledgment

The authors wish to express deepest appreciation to both the indigenous populations and traditional practitioners throughout the state of Uttar Pradesh for generously granting us their invaluable traditional knowledge; without which this project would not have been possible. We would also like to thank the Department of Botany at the University of Allahabad for providing us with access to both the herbarium and laboratory services that are necessary to conduct our research.

Conflict of Interest

The authors declare no conflict of interest.

References

1. Akhtar, M., & Kumar, V. (2019). Medicinal Plants of Eastern Uttar Pradesh: Convolvulaceae. *Journal of Indian Botanic Society*, 98 (3-4), 212-215.
2. Chen, G. T., Lu, Y., Yang, M., Li, J. L., & Fan, B. Y. (2018). Medicinal uses, pharmacology, and phytochemistry of Convolvulaceae plants with central nervous system efficacies: A systematic review. *Phytotherapy Research*, 32(5), 823-864.
3. Duthie, J. F. (1903-1929). *Flora of Upper Gangetic Plain and of the adjacent Siwalik and Sub Himalayan tracts* (Vols. 1-3). Superintendent of Government Printing.
4. Kaur, J. & Narain, S. (2018) a. Unusual presence of tetramerous and hexamerous corolla in *Evolvulus nummularius* L. *Inter. J. Res.* 5(1): 3174-3175
5. Kaur, J., & Narain, S. (2025). Conspectus of the Family Convolvulaceae with New Additions in Flora of Uttar Pradesh, India. *International Journal of Plant and Environment*. 11(3), 583-590.
6. Kaur, J., Rawat, A., Renu, Kumar, S. & Narain, S. (2016). Taxonomy, Phytochemistry, Traditional uses and Cultivation of *Ipomoea aquatica* Forsk. *Imperial J. Interdisciplinary Res.* 2(10): 408 - 412
7. Kaur, J. & Kumar, S. (2025). Supplement to the flora of Allahabad (Prayagraj) District, Uttar Pradesh, India: A checklist. *Flora and Fauna*. 31(1): 105-112.
8. Kaur, J. (2019). *Studies on family Convolvulaceae in Upper Gangetic Plains of India*. Submitted to University of Allahabad (Thesis published on Shodhganga) <http://hdl.handle.net/10603/349585>
9. Kaur, J., & Narain, S. (2018). *Ipomoea littoralis* and *Ipomoea capitellata* var. *multilobata*: New Records For Upper Gangetic Plains Of India. *Flora and Fauna*, 24(1), 3-7.
10. Kaur, J., Narain, S., & Kumar, S. (2018). Novelties in Convolvulaceae to the Flora of Allahabad District (Uttar Pradesh, India). *Bionature*, 38(4), 259-265.
11. Sahu, P. K., & Gupta, S. (2014). Medicinal Plants of morning glory: Convolvulaceae of Central India (Madhya Pradesh and Chattishgarh). *Biolife*, 2(2), 463-469.
12. Singh, K. P., Khanna, K. K., & Sinha, G. P. (2016). *Flora of Uttar Pradesh* (Vol. 1). Botanical Survey of India.
13. Srivastava, D. (2017). Medicinal plants of genus *Ipomoea* found in Uttar Pradesh. *Research Journal of Recent Sciences*, 6(12), 12-22.
14. Sultana, R., & Rahman, A. H. (2016). Convolvulaceae: A taxonomically and Morphologically Important (Morning glory family). *International Journal of Botany Studies*, 1(4), 47-52.

15. Thomas, B., & Divya, M. S. (2019). Convolvulaceae: medicinally important morning glory family. *Devagiri Journal of Science*, 5(1), 22-32.
16. Wood, J. R. I., Muñoz-Rodríguez, P., & Scotland, R. W. (2022). Priorities For Taxonomic Studies Of Indian Convolvulaceae. *Journal of Economic Taxonomy and Botany*, 46(1-2), 1-2.
17. Yadav, S., Hemke, A., & Umekar, M. (2018). Convolvulaceae: A Morning Glory Plant Review. *International Journal of Pharmaceutical Sciences and Research*, 51(1), 103-117.