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Review Article

Threatened climber of India and their medicinal uses and gaps

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Abstract: Present study highlights threatened climbers in India, focusing on their medicinal, ecological, and conservation significance. The listed species, such as *Aristolochia tagala*, *Ceropegia* species, and *Gloriosa superba*, exhibit valuable properties like anticarcinogenic, antimicrobial, and anti-arthritic effects. However, many species are data deficient or threatened, emphasizing the need for conservation efforts to preserve their potential benefits.

Keywords: Biodiversity, Conservation, Ecological significance, Medicinal uses

Introduction

India is home to a vast array of plant species, including climbers, which have been used in traditional medicine for centuries (Mety et al., 2023; Singh et al., 2024). Climbers have evolved unique adaptations to thrive in diverse ecosystems, making them a valuable component of India's biodiversity (Pujari et al., 2025). Many of these plant species possess medicinal properties (Mety et al., 2023). Despite their importance, many climber species in India are facing threats due to habitat loss, over-harvesting, and climate change. The loss of these species not only affects ecosystem balance but also jeopardizes the livelihoods of communities that depend on them for medicinal purposes. Furthermore, the lack of documentation and research on these species hinders conservation efforts and the discovery of new medicines. The need for a study on threatened climbers in India is crucial to identify and conserve these species before they become extinct. By documenting their medicinal properties, ecological significance,

and conservation status, researchers can inform policy decisions and conservation strategies. This study can also contribute to the discovery of new medicines and promote sustainable use of these plant resources, ultimately benefiting both the environment and human health.

Methodology

Literature surveys were conducted using the Scopus, Crossref, Google Scholar, PubMed, NCBI, and Web of Science databases, which involved systematically searching and analysing published scholarly articles to gather information on threatened climbers of India and their medicinal uses. The databases were searched using keywords like “threatened climbers of India”, “medicinal uses”, and “IUCN status”. The data on the mode of consumption were tabulated with details (Kumar, 2025).

Results and discussion

The study identified 22 threatened climber species in India, showcasing their medicinal, ecological, and conservation significance (Table 1). These species, such as *Aristolochia tagala*, *Gloriosa superba*, and *Ceropegia* species, exhibit valuable properties like anticarcinogenic, anti-arthritic, and antimicrobial effects, highlighting their potential in traditional medicine and modern drug discovery. The findings emphasize the urgent need for conservation efforts, as many of these species face threats due to habitat loss, over-harvesting, and climate change. By documenting their medicinal properties and ecological importance, this study provides a foundation for informed conservation strategies, sustainable use, and further research, ultimately contributing to the preservation of India's biodiversity and the discovery of new medicines.

Table 1: Some threatened climbers of India and their significances

Name	Family	Uses	Sources
Aristolochia tagala Cham.	Aristolochiaceae	Anticarcinogenic properties	Sarvalingam and Rajendran, (2016); Hadem et al., (2015)
Bauhinia diphylla Banks	Fabaceae	Data Deficient	Pandi and Babu, (2022)
Celastrus paniculatus Willd.	Celastraceae	To improve brain activity	Sarvalingam and Rajendran, (2016); Present study
Ceropegia anjanerica Malpure, M.Y.Kamble & S.R.Yadav	Apocynaceae	Tubers are edible for medicinal purposes and good health.	Pandi and Babu, (2022); Dinkar et al., (2023)
Ceropegia mannarana P.Umam. & P.Daniel	Apocynaceae	Antiseptic and for treating external tumors	Sarvalingam and Rajendran, (2016); Uma and Parthipan, (2015).
Ceropegia odorata Nimmo	Apocynaceae	Tubers are edible for medicinal purposes and good health	Kulloli et al., (2020); Pandi and Babu, (2022)
Coscinium fenestratum (Goetgh.) Colebr.	Menispermaceae	Antioxidant	Sarvalingam and Rajendran, (2016);

			Punitha et al., (2005)
Dalbergia congesta Graham ex Wight & Arn.	Fabaceae	Data Deficient	Pandi and Babu, (2022)
Decalepis hamiltonii Wight & Arn.	Apocynaceae	It is used in paediatric rejuvenation	Pandi and Babu, (2022); Sandopa and Vellapandian, (2024).
Dimorphocalyx beddomei (Benth.) Airy Shaw	Euphorbiaceae	Data Deficient	Pandi and Babu, (2022)
Eleiotis rottleri Wight & Arn.	Fabaceae	Data Deficient	Pandi and Babu, (2022)
Genianthus crassifolius (Wight) Hook.f.	Apocynaceae	Data Deficient	Pandi and Babu, (2022)
Gloriosa superba L. (Figure 1)	Colchicaceae	Arthritis	Sarvalingam and Rajendran, (2016); Jana and Shekhawat, (2011)
Gnetum edule (Willd.) Blume (Figure 2)	Gnetaceae	The oils obtained from the seed kernels are used for the treatment of rheumatism.	Sharma et al., (2025)
Gymnema khandalense Santapau	Apocynaceae	Presence of phenolic compounds in the plant shows its antimicrobial activities.	Satheesh et al., (2013); Sarvalingam and Rajendran, (2016)
Lathyrus odoratus L.	Fabaceae	The infusion of the flowers is used in Colombia to calm the nerves.	Pérez, (1996); Pandi and Babu, (2022)
Operculina turpethum (L.) Silva Manso. (Figure 4)	Convolvulaceae	Useful in haemorrhoids	Sarvalingam and Rajendran, (2016); Gupta and Ved, (2017)
Sarcostemma viminale (L.) R.Br.	Apocynaceae	Used to cure tuberculosis.	Sarvalingam and Rajendran, (2016); Arora and Meena, (2018).
Toxocarpus beddomei Gamble	Apocynaceae	Presence of phenolic compounds in the plant show its pharmacological activities.	Sarvalingam and Rajendran, (2016); Purushothaman and Karthi, (2017).
Uvaria hamiltonii Hook.f. & Thomson (Figure 3)	Annonaceae	Flower infusion is used to enhance the health of heart.	Devarakonda et al., (2022)
Vigna khandalensis (Santapau) Sundararagh. & Wadhwa	Fabaceae	Seeds are utilized by human beings at the time of famine.	Umdale et al., (2018); Pandi and Babu, (2022)
Willughbeia cirrhifera Abeyw.	Apocynaceae	Data Deficient	Pandi and Babu, (2022)

(Data Deficient: Medicinal uses available in genus but not in mentioned species)

Figure 1: Flowers, fruits and leaves of *G. superba*

Figure 2: Cone of *Gnetum edule*

Figure 3: Leaves and flower of *Uvaria hamiltonii*

Figure 4: Leaves and flower of *Operculina turpethum*

The study's findings highlights the importance of conserving India's threatened climber species, which possess significant medicinal and ecological value. The documented species exhibit a range of bioactive properties, highlighting their potential in traditional medicine and modern drug discovery. However, the threats they face due to habitat loss, over-harvesting, and climate change necessitate urgent conservation efforts. This study provides a foundation for informed conservation strategies, emphasizing the need for sustainable use and further research to preserve India's biodiversity and unlock the potential of these valuable plant resources.

Conclusion

Present study highlighted the significance of threatened climber species in India, emphasizing their medicinal, ecological, and conservation value. The documentation of 22 species provides a foundation for informed conservation strategies, sustainable use, and further research. Urgent conservation efforts are necessary to protect these species and preserve India's biodiversity, ultimately contributing to the discovery of new medicines and promoting sustainable development.

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