CHAPTER 8

Medicinally important common species of Cyperaceae

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Abstract

This review provides an overview of the medicinal uses and pharmacological activities of 13 Cyperaceae species found in India. The species, including *Cyperus rotundus, Cyperus scariosus*, and *Fimbristylis dichotoma*, have been traditionally used to treat various ailments, such as digestive disorders, skin infections, and urinary disorders. The review highlights the potential of these plants as a source of new medicines and underscores the need for further research to isolate and characterize the bioactive compounds responsible for their pharmacological activities. The study also emphasizes the importance of conserving these plant species, which are an integral part of India's traditional medicine heritage.

Keywords: Cyperaceae, medicinal plants, traditional medicine, pharmacological activities

Introduction

The Cyperaceae family, commonly known as sedges, is a diverse group of flowering plants (Barrett, 2013). The traditional systems of medicine in India, such as Ayurveda, Siddha, and Unani, have relied heavily on plants for their medicinal properties (Pandey et al., 2013). Indian traditional medicines have long used Cyperaceae species (Kamala et al., 2018). Many species of the Cyperaceae family,

used to treat various diseases, have significantly contributed to India's traditional medicine repertoire (Bezerra et al., 2022). In spite of their medicinal importance, the Cyperaceae species have received relatively little attention in terms of scientific research in pharmacological aspects. There is a need to document the traditional uses and pharmacological activities of these plants, as well as to investigate their potential as a source of new medicines. Therefore, the present review aims to provide an overview of the medicinal uses and pharmacological activities of Cyperaceae species. This information can serve as a valuable resource for researchers, herbalists, and medical professionals interested in exploring the medicinal properties of Cyperaceae species.

Methodology

This review was conducted through a comprehensive search of existing literature on medicinal values of Cyperaceae during 2023-2024, focusing on their medicinal, pharmacological and traditional uses along with reported bioactive compounds. A range of databases, including PubMed, Scopus,and Web of Science, were searched using keywords such as "Cyperaceae "medicinal properties", "traditional medicine", and "pharmacology". Relevant articles and books published were selected and reviewed (Muthu et al., 2006; Taheri et al., 2021; Rameshkumar et al., 2022).

Results and discussion

The results from the review highlight the diverse range of medicinal uses of Cyperaceae plants in India. Traditional Indians have used the 13 species listed in the table to treat a variety of ailments, such as digestive disorders, skin infections, urinary disorders, and more (Table 1; Figure 5). *Cyperus rotundus* has been used to treat skin infections and scorpion bites, while *Cyperus scariosus* has been used to manage diabetes (Table 1). This underscores the importance of these plants in traditional medicine and their potential as a source of new medicines. The table also demonstrates the widespread use of some Cyperaceae species for treating various ailments. *Cyperus articulatus* has been used to treat urinary disorders, while *Cyperus brevifolius* has been used to treat sore legs (Table 1). This suggests that these plants may possess bioactive compounds with multiple pharmacological activities, warranting further research to isolate and characterize them.

Table 1: Some common Cyperaceae of India and their medicinal uses

Plant name	Common name	Uses	Source
Bulbostylis barbata (Rottb.) C.B.Clarke	Watergrass	Dysentery	Cheema et al., (2017)
Cyperus articulates L. (Figure 1)	Jointed flatsedge	Urinary disorders	Nogueira et al., (2020)
Cyperus brevifolius (Rottb.) Hassk.	Shortleaf spikes edge	Sore legs	Holdsworth, (1990)
Cyperus compressus L.	Annual sedge	Helminthiasis	Soren et al., (2019)
Cyperus cyperoides (L.) Kuntze (Figure 2)	Common flat sedge	Wounds	Fokou et al., (2015)
Cyperus difformis L. (Figure 3)	Rice sedge	Diarrhea	Gairola et al., (2014)
Cyperus erectus (Schumach.) Mattf. & Kük.	Kyllinga erecta	Foot swelling	Thornton-Barnett, (1973)
Cyperus esculentus L.	Tiger nut	Menstrual problems	Bryant, (1983)
Cyperus iria L.	Umbrella sedge	Indigestion	Rameshkumar et al., (2022)
Cyperus nitidus Lam.	Waterbiesie	Digestive problems	Moteeteeet al., (2019)
Cyperus rotundus L. (Figure 4)	Purple nutsedge	Skin infections & scorpion bites	Peerzada et al., (2015); Muthu et al., (2006)
Cyperus scariosus R.Br.	Cypriol	Diabetes	Gandhi et al., (2024)

Fimbristylis dichotoma (L.) Vahl	Forked fimbry	Hair loss	Cheema et al., (2017)



Figure 1: Flowers of *Cyperus articulatus*



Figure 2: Flowers of *Cyperus cyperoides*



Figure 3: Habitat of *Cyperus diffusus*



Figure 4: Flowers of *Cyperus rotundus*

Furthermore, the results highlighted the need for conservation efforts to preserve these plant species, which are an integral part of India's traditional medicine heritage. The results from the table also indicate that there is a need for more research on the medicinal properties of Cyperaceae plants. Researchers have extensively studied some species, like *Cyperus rotundus*, while *Fimbristylis dichotoma* has received relatively little attention (Table 1). Further research is needed to fully explore the medicinal potential of these plants and to validate their traditional uses. This will not only contribute to the development of new medicines but also help to preserve India's rich traditional medicine heritage.

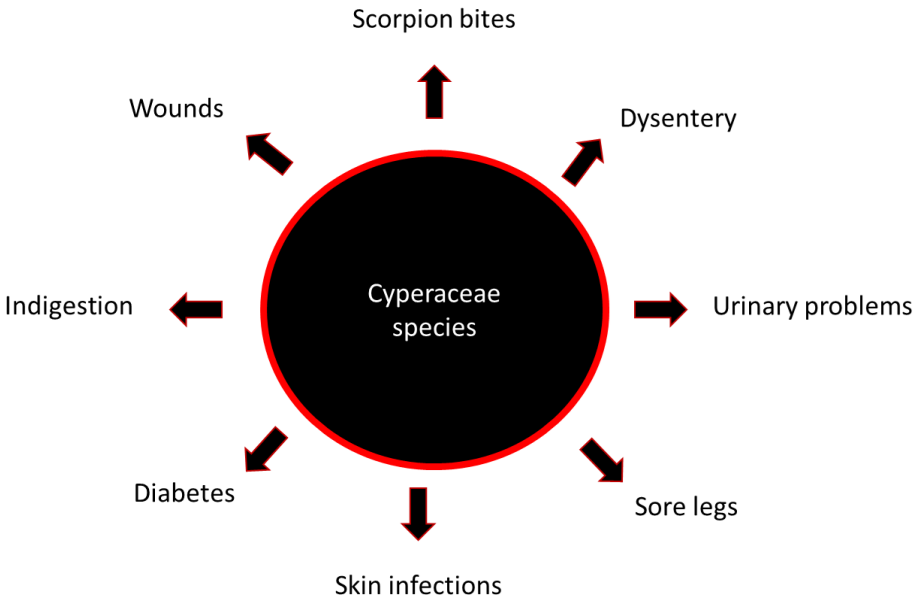


Figure 5: Some common uses of species belonging to Cyperaceae family

Conclusion

The Cyperaceae family has been a vital part of traditional medicine in India for centuries. This review has highlighted the medicinal uses and pharmacological activities of 13 Cyperaceae species found in India. The species have been traditionally used to treat various ailments, and their bioactive compounds have shown promising pharmacological activities. However, further research is needed to fully explore the medicinal potential of these plants and to validate their traditional

uses. Future research on Cyperaceae species should focus on isolating and characterizing the bioactive compounds responsible for their pharmacological activities. Additionally, in vivo and in vitro studies are needed to fully understand the mechanisms of action of these compounds. The development of standardized extracts and formulations from Cyperaceae species could also facilitate their use in clinical settings. Furthermore, investigations into the conservation and sustainable use of Cyperaceae species are essential to ensure their continued availability for medicinal and other purposes.

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