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PHARMACOLOGICAL AND ETHNOMEDICAL IMPORTANCE OF PLANTS BELONGING TO THE *MENISPERMACEAE* FAMILY

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ABSTRACT

Medicinal plants of the *Menispermaceae* family occupy an important position in traditional healthcare systems including Ayurveda, Siddha, and Unani medicine. Members of this family contain numerous biologically active constituents, especially alkaloids, which are associated with a wide range of therapeutic properties.[1] This review summarizes the ethnomedical significance and pharmacological potential of selected *Menispermaceae* species such as *Cyclea peltata, Tinospora cordifolia, Cissampelos pareira, and Stephania japonica.* Various experimental studies have reported anti-inflammatory, antimicrobial, hepatoprotective, nephroprotective, anti-ulcer, and anticancer activities in these plants.[2] The review highlights the therapeutic relevance of this family and emphasizes the importance of additional pharmacological and clinical investigations.

KEYWORDS: *Menispermaceae*, Ethnomedicine, Medicinal plants, Pharmacological activity.

INTRODUCTION

Medicinal plants continue to play a significant role in healthcare because they are considered economical, accessible, and comparatively safer than many synthetic drugs. The *Menispermaceae* family comprises mainly woody climbers and twining shrubs distributed widely across tropical and subtropical regions of the world.[3]

Species belonging to this family are recognized for the presence of isoquinoline and bisbenzylisoquinoline alkaloids, which contribute to several biological activities. In traditional medicine, these plants have been employed for the treatment of fever, inflammation, diabetes, infections, respiratory disorders, and chronic ailments.[4]

Among them, *Cyclea peltata* has long been used in indigenous systems of medicine for managing fever, urinary complications, and poisoning caused by snake bites.[5]

IMPORTANT PLANTS OF THE MENISPERMACEAE FAMILY

Cyclea peltata

Common name: Patha.

This plant is extensively used in Ayurvedic medicine for the management of fever, renal disorders, and inflammation. It is reported to contain alkaloids and other secondary metabolites with significant therapeutic value.[6]

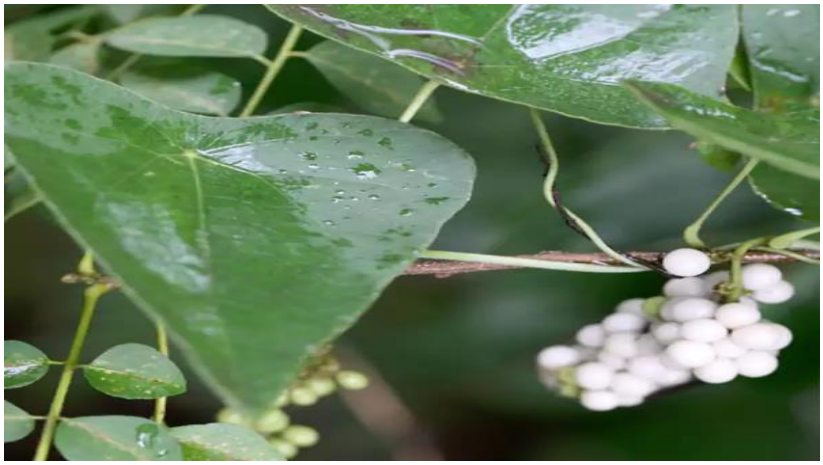

Fig No 01: Cyclea peltata.

Tinospora Cordifolia

Common name: Guduchi

This species is widely known for its immunomodulatory properties. Traditionally, it has been prescribed for fever, liver diseases, metabolic disorders, and immune-related conditions.[7]

Fig No. 02: Tinospora cordifolia.

Cissampelos pareira

The plant has been utilized in folk medicine for urinary tract infections, inflammatory conditions, and pain management. Pharmacological studies also indicate analgesic and antipyretic properties.[8]

Fig No. 03: Cissampelos pareira.

Stephania Japonica

Traditionally, this species has been employed in the treatment of neurological and inflammatory disorders. Extracts of the plant exhibit antioxidant and anti-inflammatory activities.[9]

Fig No 03: Stephania japonica.

ETHNOMEDICAL IMPORTANCE

Plants belonging to the Menispermaceae family have been traditionally used in several therapeutic applications, including:

Treatment of fever and infectious diseases.

Management of diabetes and metabolic abnormalities.

Neutralization of toxins and snake venom.

Treatment of kidney and urinary disorders.

Relief of asthma and respiratory complications.[10]

Roots of Cyclea peltata are traditionally administered for conditions such as malaria, toothache, and diabetes in various indigenous medicinal practices.[11]

PHYTOCHEMICAL CONSTITUENTS

Members of the Menispermaceae family contain a variety of secondary metabolites, including:

Alkaloids such as tetrandrine and bisbenzyl isoquinoline derivatives.

Flavonoids

Terpenoids

Glycosides

Phenolic compounds

These phytochemicals are believed to contribute to the broad spectrum of pharmacological activities observed in these plants.[12]

PHARMACOLOGICAL ACTIVITIES

Anti-cancer Activity

Certain species of this family possess cytotoxic properties against different cancer cell lines. Methanolic extracts of menispermaceae species have demonstrated inhibitory effects on tumor cell proliferation in experimental investigations.[13]

Hepatoprotective Activity

Plants of this family are reported to protect hepatic tissues against toxic injury and oxidative stress. Experimental evidence suggests that extracts of menispermaceae species may reduce elevated liver enzyme levels and improve antioxidant status.[14]

Nephroprotective Activity

Several studies indicate that plant extracts can reduce renal damage induced by nephrotoxic drugs such as cisplatin. Improvement in antioxidant defense mechanisms has also been observed.[15]

Anti-inflammatory Activity

The anti-inflammatory effects of Menispermaceae plants are mainly associated with alkaloids and flavonoids that suppress inflammatory mediators including cyclooxygenase and lipoxygenase pathways.[16]

Antimicrobial Activity

Extracts prepared from these medicinal plants exhibit inhibitory activity against both Gram-positive and Gram-negative microorganisms. Methanolic extracts are often reported to show comparatively higher antimicrobial potential.[17]

Anti-ulcer Activity

Certain members of this family demonstrate gastroprotective effects by reducing gastric acid secretion and enhancing mucosal defense mechanisms. Experimental studies have reported significant anti-ulcer activity.[18]

Anti-asthmatic Activity

Plant extracts have shown bronchodilatory properties and the ability to reduce histamine-induced bronchospasm, supporting their traditional use in respiratory disorders.[19]

Anti-toxin Activity

Some Menispermaceae species are traditionally recognized for their antivenom potential. Experimental findings indicate that species possesses toxin-neutralizing activity against snake venom.[20]

CONCLUSION

Medicinal plants belonging to the Menispermaceae family possess considerable ethnomedical and pharmacological significance. Scientific investigations support many of their traditional therapeutic applications, including anti-diabetic, hepatoprotective, anti-inflammatory, and antimicrobial activities. Continued research focusing on phytochemistry, toxicology, and clinical evaluation may help in the discovery of new therapeutic agents from this important plant family.

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