Biology, Agriculture, SciTech and Environment
Vol 5 [9] September 2025; 05-07
ISSN 2321-8746

Full Text: https://www.basecongress.com/ebase.html

The Biological Activities of The Medically Important Grass *Cyperus rotundus*

Devasena, B [*1], Kiran Kumar, S [2], Anitha, W [3] , Vickneswari, M[4] and Mahalakshmi, J [5]
[1 & 2]Peri college of physiotherapy, Chennai -48
[3] Peri college of Pharmacy, Chennai -48
[4] Peri Institute of Technology, Chennai - 48
[5] Peri college of Nursing, Chennai -48

ABSTRACT
Researchers are increasingly interested in exploring herbal medicines for human as well as animal health advantages. Pharmacologically powerful and low or no side-effects for preventive medication are medicines that are acquired from natural sources. *Cyprus rotundus* L. is an important medicinal plant, especially utilised in medicine in the Unani system.It is popularly known in tropical, subtropical and temperate countries as moth which is a raspberry grass. Flavonoids, tannins, glycosides, furochromones, monoterpenes, sonoros, sitosterols, alkaloids, saponins, terpénoidos, essential oils, starches, carbs, proteins and many more secondary metabolites are the major chemical components included in this plant. Several pharmacological activities, such as antibacterial, anticancerous, anti-convulsant, antidiabetic, anti-diarrheal, anti-inflammatory, anti-lipidemic, antimalarial, antimutagenic have been found to have numerous components of *Cyprusrotundus*, antidiabetes, Antiobesity, antioxidants, anti-European pathogens, cardioprotective, neuroprotective and nootropic agents. Antiobesity. In this study we examine the biological and therapeutic properties of *Cyprus rotundus*.
***Key words*:** *Cyprus rotundus,* Medicinal plants, biological activities, Phytochemistry

Received 29.07.2025 Revised 20.08.2025 Accepted 23.09.2025

CITATION
Devasena, B , Kiran Kumar, S , Anitha, W , Vickneswari, M and Mahalakshmi, J. The Biological Activities of The Medically Important Grass *Cyperus rotundus*. Biol. Agricul. SciTech and Environ. Vol 5 [9] September 2025; 05-07

INTRODUCTION

A thin, erect, perennial cobblestone, *Cyperus roundus* spreads through a fibrous root structure. It is thin, subterranean, known as rhizome, white and fleshy in the beginning and covered with scaly, amended leaves [1]. When the rhizome reaches the surface, it might float into a tiny, spherical structure, known as the basal bulb. Nut-grass rhizomes also generate tubers that store starch as a food supply and may produce new rhizomas or plants [2].

The tubers are around 1 to 3.5 cm long and, if young, brown and firm, white and succulent. The tubers are formed by the scientific name of the nutgrass. The trunks are smooth and upright, generally around 30 to 40 cm high, and in a cross-section, they are triangular. The leaves come from the plant base and are grouped in groups of three on the trunk [3]. They are light, glossy and dark green; they have a pointed tip and a grooved upper surface and are thin and long, length between 20 and 30 cm and width between 0.2 and 1 cm. These species flowers are carried at the terminals of the stalks in clusters. The inflorescence is around 3 to 9 different-long stalks at the ends of which are reddish-brown to violet. The colour of the spikes lends the noodle its other name. Each 3,5 cm-long spikeleton has 10 to 40 petals, but instead sits inside oval-shaped, dry bracts, called membranous bracts [4].

A dry, single-semitic fruit of two millimetres, with a red of grey lines, is produced by the nut grass. This grass is brown to dark.It is quite crucial to treat pure pharmaceutical diseases [5]. Medicines for natural products are usually secondary metabolites and derivatives. *Cyprus rotundus* is a wide range of adaptive medicinal plants that have potential pharmacological benefits not just as a prophylactic therapy for various illnesses globally [6].

Cyprus rotundus, the largest monocotyledon family, is a member of the cyperacea family. It's a pesticide that commonly exists in temperate and tropical rice fields, perennial weed. Many tribes in the central and southern parts of India have recognised the therapeutical potential of *C.rotundus* weed from ancient times and used this to alleviate ailments such as GMD, joint pain, and wound healing. Several prior studies of *Cyprus rotundus* have indicated that therapy with Cyperus improves scopolamine, both in mice and

antibacterial antioxidants and memory deficiencies [7]. The plant components of Cyperus include rhizomes, pipes, baselines and fibrous roots used for several medicinal purposes.

Chemical constituent and Traditional uses

The principal substances in the extract of *Cyprus rotundus* rhizome include essential oil, flavonoids, sesquiterpenes, monoterpenes, salpharotunolsitosterols, betacyperones, βselinene, campaignhen, calcium, cyperene, cyperene, cyperenone, cyperotundenone, linoleic acid, oleic acid, rotatenol, rotundone, polypadene [8].

The *Cyperus rotundus* herb is historically used as Carminative, astringent, diuretic, hepatoprotective, antipyretic, anti-emethical, and enhanced melanin formation [9]. It was also used for food poisoning, indigestion, and intestinal irritation, malaria, cough, bronchitis, kidney and vesic calculi, amenorrhea, dysmenorrhoea, depriving of memory, bite, bug, infertility, cervical cancer, and monthly problems. it was also used in food poisoning, dysmenorrhea [10]. *Cyprus rotundus* rhizomes were regarded astringent, diaphoretic, diuretic, analgesic, according to Ayurveda, Aromatic, antitussive, antispasmodic, carminative, emmenagogues, lithological, sedative, stimulating, stomachic, vermifugous, tonic and antibacterial [11].

Antidiarrhoeal actions

Antidiarrheal efficacy was found at dosages of 250 and 500 mg/kg of rhizome induced diarrhoea in mice as the methanol extract from *Cyprus rotundus* rhizomes [12]. Observed that *Cyprus rotundus* tubers are aquous extract that has anti-giarthritis action. Anti-diarroheal activity against enteropathic Escherichia coli and enteroinvasive *E. coli* and *Shigella flexneri* in human type 2(HEP-2) cells were also demonstrated.

Anti-Hyperlipidemic

Cyprus rotundus Rhizomes hypolipidaemical activity in high fat diet hyperlipidaemic rats has been assessed by [13]. The results showed that serum lipid profiles were reduced statically significantly. At the conclusion of 15 days of operation treatment with various extract dosages significantly reduced the total blood cholesterol, LDL, and TG levels [14].

Anticytotoxic

Kilani et.al (2008) demonstrated the development and multiplication of L1210 cells generated from murine lymphoblastic leucemia in MTT assays using ethyl acetate extracts from the *Cyprus rotundus*. The cytotoxic effects of C. rotundus extracts in SH-SY5Y cell culture were also reported [12]and claimed that the essential oil *Cyprus rotundus* of Tunisia against the leukaemia cell line L1210 by MTT test was extremely efficient [14].

Anticonvulsant Action

In this work, anticonvulsants were tested to prevent convulsions produced by chemical convulsive agents in mice from the roots and rhizomes of ethanolic extract *C. rotundus*. A biogenic amine level in the whole brains has been estimated to lead to an anticonvulsive conclusion [15]. Dose-dependent effect of EECR was observed. Catecholamine levels were raised in the mouse brain. There were also higher amounts of GABA, glutamine and glutamate. EECR exhibits antifreeze action in this way [16].

Antioxidant Activity

In vitro non-enzymatic glycosylation of the haemoglobin technique was performed to assess the antioxidant potential of EECR. Since haemoglobin non enzyme glycosylation is an oxidation process, the presence of a flavonoid, ascorbic acid and polyphenols in a herbal ethanolic extract is predicted to block the reaction based on this concept in this article [17].

Antidiabetic Activity

Taking into consideration the traditional diabetic claim of *Cyprus rotundus*, the impact of *Cyprus rotundus* on alloxan hyperglycemia in rats was assessed. Blood glucose levels were considerably reduced by oral treatment of 500 mg/kg of extract (7 consecutive days once a day). It can be linked to the anti-hyperglycemic activity since it shows the significant radical DPPH scavenging effect in vitro [18].

Antibacterial Activity

Cyprus rotundus has a variety of applications which were based on the various plant components [19]. For thousands of years, the medical usage of cyperus has been employed in medicine. Its leaves, seeds and oil are the components of the cyper. Damp distillation took place in the extraction procedure. Determined organic optimum extractant. The petroleum obtained was identified by chromatography of Thin Layer (TLC) employing a chromatographic eluent toluene (1:9) [20].

CONCLUSION

The information collected above on *Cyprus rotundus* use worldwide is matched to the literature accessible. Ethno-botanical and traditional usage of natural chemicals, particularly those of plants, has attracted much attention recently since they are thoroughly studied and usually thought to be safe for human use. In the quest for novel compounds for managing diverse illnesses, the traditional method is ideal.A thorough literature search on *Cyprus rotundus* shows that it is a popular medicine for the treatment of diseases across

diverse ethnic groups, Ayurvedic practitioners and traditional practitioners. The medicinal potential of this plant is explored by researchers, since it possesses many unknown therapeutic qualities.

REFERENCES

1. Al-Snafi, A. E. (2016). A review on *Cyprus rotundus* A potential medicinal plant. IOSR Journal Of Pharmacy, 6(7), 32-48.
2. Meena, A. K., Yadav, A. K., Niranjan, U. S., Singh, B., Nagariya, A. K., & Verma, M. (2010). Review on *Cyprusrotundus*-A potential herb. International Journal of Pharmaceutical and Clinical Research, 2(1), 20-22.
3. Sivapalan, S. R. (2013). Medicinal uses and pharmacological activities of *Cyprus rotundus* Linn-A Review. International Journal of Scientific and Research Publications, 3(5), 1-8.
4. Pal, D. (2015). A review on *Cyprus rotundus* as a tremendous source of pharmacologically active herbal medicine. International Journal of Green Pharmacy (IJGP), 9(4).
5. Imam, H., Sofi, G., Seikh, A., & Lone, A. (2014). The incredible benefits of Nagarmotha (*Cyprus rotundus*). International Journal of Nutrition, Pharmacology, Neurological Diseases, 4(1), 23.
6. Baloch, A. H., urRehman, H., Ibrahim, Z., Buzdar, M. A., & Ahmad, S. (2015). The biology of Balochistani weed: *Cyprus rotundus* Linnaeus. A review. Pure and Applied Biology, 4(2), 171.
7. Kumar, M., Rani, M., &Meher, B. (2017). Review on Pharmacology and Phytochemistry of *Cyprus rotundus* L. Current Research in Pharmaceutical Sciences, 11-15.
8. Bajpay, A., Nainwal, R. C., Singh, D., & Tewari, S. K. (2018). Medicinal value of *Cyprus rotundus* Linn: An updated review. Medicinal Plants, 10(3), 165-170.
9. Bajpay, A., Nainwal, R. C., Singh, D., & Tewari, S. K. (2018). Medicinal value of *Cyprus rotundus* Linn: An updated review. Medicinal Plants, 10(3), 165-170.
10. Srivastava, R. K., Singh, A., & Shukla, S. V. (2013). Chemical investigation and pharmaceutical action of *Cyprusrotundus*-a review. Journal of Biologically Active Products from Nature, 3(3), 166-172.
11. Riemens, M. M., van der Weide, R. Y., &Runia, W. T. (2008). Biology and control of *Cyprus rotundus* and Cyperusesculentus, review of a literature survey. Plant Research International BV Wageningen.
12. Kamala, A., Middha, S. K., &Karigar, C. S. (2018). Plants in traditional medicine with special reference to *Cyprus rotundus* L.: a review. 3 Biotech, 8(7), 1-11.
13. Riemens, M. M., van der Weide, R. Y., &Runia, W. T. (2008). Nutsedge, Biology and control of *Cyprus rotundus and* Cyperus esculentus, review of a literature survey.
14. Imam, M. Z., & Sumi, C. D. (2014). Evaluation of antinociceptive activity of hydromethanol extract of *Cyprus rotundus* in mice. BMC complementary and alternative medicine, 14(1), 1-5.
15. Abo-Altemen, R. A., Al-Shammari, A. M., &Shawkat, M. S. (2019). GC-MS analysis and chemical composition identification of *Cyprus rotundus* L. from Iraq. Energy Procedia, 157, 1462-1474.
16. Singh, N., Pandey, B. R., Verma, P., Bhalla, M., &Gilca, M. (2012). Phyto-pharmacotherapeutics of *Cyprus rotundus*Linn.(Motha): an overview.
17. Peerzada, A. M., Ali, H. H., Naeem, M., Latif, M., Bukhari, A. H., & Tanveer, A. (2015). *Cyprus rotundus* L.: Traditional uses, phytochemistry, and pharmacological activities. Journal of ethnopharmacology, 174, 540-560.
18. Keeley, P. E. (1987). Interference and interaction of purple and yellow nutsedges (*Cyprus rotundus* and C. esculentus) with crops. Weed Technology, 74-81.
19. Samra, R. M., Soliman, A. F., Zaki, A. A., Ashour, A., Al-Karmalawy, A. A., Hassan, M. A., &Zaghloul, A. M. (2021). Bioassay-guided isolation of a new cytotoxic ceramide from *Cyprus rotundus* L. South African Journal of Botany, 139, 210-216.
20. Haghgoo, R., Mehran, M., Zadeh, H. F., Afshari, E., & Zadeh, N. F. (2017). Comparison between antibacterial effect of chlorhexidine 0.2% and different concentrations of *Cyprus rotundus* extract: An in vitro study. Journal of International Society of Preventive & Community Dentistry, 7(5), 242.