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Review Article

Medicinal uses of *Evolvulus nummularius* (L.) L. (Convolvulaceae): a review

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Abstract: *Evolvulus nummularius* (L.) L. (Convolvulaceae), commonly known as dwarf morning glory, has been traditionally used in various medicinal applications. This review aims to provide an overview of the medicinal uses, morphology, secondary metabolites, ecology, food values, and invasive potential of *E. nummularius*. The plant has been reported to possess wound-healing, anthelmintic, hepatoprotective, and sedative properties, among others. This plant holds unique secondary metabolites include β-sitosterol, glucoside and stigmasterol. Despite its medicinal value, *E. nummularius* is considered an invasive species in various regions. This review highlights the importance of *E. nummularius* as a medicinal plant and its potential risks as an invasive species.

Keywords: Bioactive compounds, Convolvulaceae, medicinal uses, threats

Introduction

The world is facing a significant loss of biodiversity, with many plant species remaining undocumented and underutilized. Local plants possess immense medicinal and cultural values, yet their traditional knowledge and uses are often overlooked and at risk of being lost (Kumar et al., 2018). The documentation of local plant species is essential to preserve traditional knowledge, promote sustainable utilization, and unlock their potential for addressing various health and environmental challenges (Kumar and Satapathy, 2011). This review aims to contribute to the documentation of local plant species by highlighting the medicinal uses, phytochemistry, and ecological significance of *Evolvulus*

nummuralius (L.) L. (Convolvulaceae), a traditionally valued plant species. It is also known as dwarf morning glory, has been traditionally used in India and other regions for various medicinal purposes, including treating burns, cuts, wounds, scorpion stings, and as an anthelmintic (Iqbal et al., 2020). Important traditional and potential medicinal uses are followings (Jain, 1991; Pavithra et al., 2009; Ketjarun et al., 2016; Ambika and Nair, 2019; Gillella and Mohan, 2024):

1. **Wound healing**: The plant is known for its wound-healing properties, used to treat cuts, burns, and wounds.
2. **Anthelmintic**: It has been used as an anthelmintic, meaning it can help expel worms and other parasites.
3. **Scorpion stings**: The plant is used to treat scorpion stings.
4. **Hysteria and convulsions**: Some traditional uses include treating hysteria and convulsions.
5. **Hepatoprotective properties**: Research suggests that compounds in *E. nummularius* may have antioxidant and anti-inflammatory qualities that protect the liver.
6. **Sedative properties**: In some traditional systems, the plant is used as sedative.

Figure 1: Leaves and flower of *Evolvulus nummuralius*

Morphology

Species is characterized by stoloniferous perennial herb with prostrate stems, rooting at the lower nodes. Stems brown-pilose. Leaves alternate, blades round to obovate, margins entire, apices round, emarginate, veins of abaxial surfaces sparsely pubescent. Flowers axillary, pedicellate, pedicels sparsely pilose. Corollas white, united, deeply 5(–6)-lobed, opening at dawn, closing in strong sunlight. Fruits capsules globose to ovoid, always bent downwards with 2–4 seeds. Seeds ovoid, straw-colored with purplish spots (Iqbal et al., 2020; Figure 1).

Figure 2: Habitat and habit of *Evolvulus nummularius*

Secondary metabolites

Phytochemical analysis of the aerial parts of *E. nummularius* has yielded a range of bioactive compounds, including β-sitosterol, glucoside, stigmasterol, d-mannitol, ursolic acid, and oleanolic acid. Furthermore, three novel compounds have been isolated and characterized through spectroscopic and chemical studies, revealing structures that include stigmastane, coumaroyl, and ursane derivatives (Sahu and Gupta, 2014).

Ecology

The plant grows in moist localities along the roadsides, canal banks, riverbanks, under shady areas, and grassy lawns and athletic fields. At the sites examined, it continued growing through winter, spring, and summer. The flowers open in the late afternoon and early morning but close in intense daylight (Iqbal et al., 2020; Figure 2).

Food values

Whole plant is used as a vegetable in Assam and Majuli Island in India (Barua et al., 2007).

Invasive potential

Although, *E. nummularius* is used as a vegetable and medicine, it is considered a weed of lawns, grasslands and agricultural lands (Iqbal et al., 2020). The species is known as an agricultural weed of groundnut, sugarcane, rice and lentil crops in India and of wheat and mulberry in Bangladesh. It has become established on coal soils in dry tropical areas of India. It is regarded as an invasive species in Dharwad and Lucknow, India while recent reports suggest that it is becoming invasive in forest areas of Jharkhand and wetlands of India. This plant is considered a naturalized alien plant in Taiwan and the Tiwi Islands of Australia (Iqbal et al., 2020).

Conclusion

Evolvulus nummularius (L.) L. (Convolvulaceae) is a medicinally valuable plant species with a rich history of traditional use. It has a diverse range of bioactive compounds which may be responsible for its reported medicinal properties, such as wound healing, anthelmintic, hepatoprotective, and sedative activities. However, its invasive potential poses a significant risk to ecosystems and agricultural systems. Further research is necessary to fully explore the medicinal potential of *E. nummularius* while also addressing its invasive tendencies. Sustainable utilization and conservation strategies can help balance the benefits of this species with its potential risks.

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