



An Overview on Vinca rosea (Catharanthus roseus)

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Abstract:

The perennial herbaceous plant *Catharanthus roseus* sometimes referred to as *Vinca rosea* or Madagascar periwinkle, is well-known for its broad spectrum of bioactive chemicals and varied pharmacological characteristics. With a focus on its anticancer, antidiabetic, antibacterial, and antioxidant properties, this study outlines its botanical traits, traditional usage, phytochemical ingredients, and therapeutic applications.

Keywords: *Vinca rosea* anti-cancer properties, *Catharanthus roseus* medicinal uses, Vinblastine and vincristine in cancer treatment, *Vinca rosea* extract benefits, Phytochemicals in *Vinca rosea*.

1. Introduction

The medicinal plant *Vinca rosea*, is also called *Catharanthus roseus*, is very useful for many therapeutic uses. For decades, traditional medicine has utilized this Madagascar-native plant to cure a wide range of illnesses, including as infections, diabetes, and cancer. Vinblastine and vincristine, two of the plant's special alkaloids, which are used to prevent from cancer. This article highlights *Vinca rosea*'s potential as a useful resource for the creation of novel medications by summarizing its botanical traits, phytochemical components, and medicinal uses.

2. Botanical Description

The plant is a tiny shrub that grows between 30 and 100 cm tall. It has shiny green leaves and pink, white, or purple blooms with more than three petals. It prefers full sun and well-drained soils and grows best in tropical and subtropical climates.

3. Phytochemistry

C. roseus contains a phytochemical composition that includes around 130 alkaloids, flavonoids, saponins, tannins, and terpenoids together. Vincristine, vinblastine, ajmalicine, serpentine, and catharanthine are those alkaloids which is used for medicinal as well as clinical significance. These substances have a major role in its pharmacological actions.

4. Pharmacological Activities

4.1 Anticancer Activity

Microtubule inhibitors like vincristine and vinblastine are widely used to treat breast cancer, lymphoma, and leukemia. They interrupt mitotic spindle formation by halting the cell cycle in metaphase.

4.2 Antidiabetic Activity

Research has indicated that this plant has the property which helps to reduce the diabetes, which has led to the traditional usage of *Vinca rosea* to treat diabetes. The plant's flavonoids and alkaloids may be responsible for its anti-diabetic effects.

4.3 Antimicrobial and Antifungal Properties

According to studies, the presence of phenolic compounds in *C. roseus* methanolic and aqueous extracts makes them effective against *Staphylococcus aureus*, *E. coli*, and *Candida albicans*.

4.4 Antioxidant Activity

The plant also has substantial antioxidant activity, as shown by DPPH and FRAP tests, suggesting that it may be used to treat oxidative stress-related illnesses.

5. Toxicology

High quantities of vinca alkaloids can have hematological consequences, gastrointestinal problems, and neurotoxicity, even if they are beneficial at moderate levels. Consequently, cautious dosage and observation are crucial.

6. Conclusion and Future Prospects

A medicinal plant with a variety of therapeutic uses is *Vinca rosea*, Vinblastine and vincristine, are two main plant's alkaloids, which are used in the treatment of cancer. Additionally, the plant's extracts have demonstrated antibacterial and anti-diabetic properties. The potential of *Vinca rosea* and its components are used in the prevention and treatment of several illness.

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