

“MADAGASCAR PERIWINKLE (CATHARANTHUS ROSEUS) ORNAMENTAL EXTERIOR: A POTENTIAL INTERIOR THERAPEUTIC PLANT”

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Abstract:- Catharanthus roseus known as Madagascar periwinkle (MP) is a legendary medicinal plant. Catharanthus roseus a widespread plant found in greenery and homes over the world. The plant of Catharanthus roseus has an extremely extraordinary restorative property. The plant has appeared intense antidiabetic action, anticancer action, antioxidant action and cytotoxic action. The present review is an effort to give a detailed account on classification, description, phytochemical study and pharmacological properties of the plant. Ayurveda is the Indian conventional system of prescription which centers around the therapeutic capability of plants. Catharanthus roseus is a well-recognized plant in Ayurveda. It is known for its antimicrobial, antitumour, antidiabetic, antimutagenic and antioxidant impacts. It is an evergreen plant previously originated from islands of Madagascar. The blossoms may vary in shading from pink to purple and leaves are arranged in inverse sets. It has high therapeutic qualities which should be investigated broadly.

Keywords:- Catharanthus roseus, phytochemical, therapeutic, pharmacological.

1. INTRODUCTION

Periwinkle” or Catharanthus roseus normally known as “Nayantara” or “Sadabahar”, the word Catharanthus got from the Greek dialect meaning “pure flower.” While, roseus implies red, rose or ruddy [1] Therapeutic plants have a long history of use in conventional prescription. Ethno-botanical data on restorative plants, furthermore, their use by indigenous societies is helpful in the protection of conventional cultures, biodiversity, medicinal services and medication improvement.

Catharanthus roseus (L.) which is an essential therapeutic plant of the family, Apocynaceae. C. roseus which is commonly known as the Madagascar periwinkle is observed to be types of Catharanthus local and furthermore endemic to Madagascar. It is a well known plant found in greenery enclosures and homes over the world. The equivalent names of the plant are Vinca rosea, Ammocallis rosea and Lochnera rosea, other English names once utilized for the plant are Cape Periwinkle, Rose Periwinkle, Rosy Periwinkle and “Old Maid”. [2] It is developed basically for its alkaloids, which are having anticancer actions.

The Catharanthus roseus have appeared progressively powerful antidiabetic agent, anticancer action, Antidiabetic action and cytotoxic action. It is utilized to treat a large number of the deadly ailments contains a virtual cornucopia of helpful alkaloids, utilized in diabetes, blood pressure, asthma, constipation, and menstrual issue. Peckolt, in 1910, portrayed the utilization in Brazil of a mixture of the leaves to control scurvy, as amouthwash for toothache, and for the mending and cleaning of incessant wounds. In Europe related species have been utilized for the restrictive concealment of the stream of drain.

In the British West Indies it has been utilized to treat diabetic ulcer and in the Philippines has been accounted for an important oral hypoglycemic specialist. Chopra et al. have detailed that the all out alkaloids have a restricted antibacterial actions and significant hypotensive activity. The hypoglycemic and antibacterial exercises have not been affirmed, though one of the alkaloids segregated from this plant, ajmalicine, has been accounted for to have transient depressor activity on blood vessels.

2. TAXONOMIC CLASSIFICATION [3]:

- Domain: Eukarya: eukaryotes.
- Kingdom: Plantae: plants.
- Subkingdom: Tracheobionta: vascular plants.
- Super division: Spermatophyta: seed plants.
- Division: Magnoliophyta: flowering plants.
- Class: Magnoliopsida: dicotyledons.



- Subclass: Asteridae.
- Super order: Gentiananae.
- Order: Gentianales.
- Family: Apocynaceae: dogbane.
- Subfamily: Rauvolfioideae.
- Tribe: Vinceae.
- Genus: Catharanthus G. Don.
- Species: Catharanthus. Roseus
- Specific epithet: roseus (Linnaeus) G. Don.
- Botanical name: Catharanthus roseus (Linnaeus) G. Don (1837): Madagascar periwinkle

3. MORPHOLOGY

Catharanthus roseus is an evergreen subherb or herbaceous plant growing to 1 m. tall. The leaves are oval to oblong, 2.5- 9.0 cm. long and 1- 3.5 cm. broad glossy green hairless with a pale midrib and a short petiole about 1- 1.8 cm. long and they are arranged in the opposite pairs. The flowers are white to dark pink with a dark red center, with a basal tube about 2.5- 3 cm. long and a corolla about 2-5 cm. diameter with five petals like lobes. The fruit is a pair of follicles about 2-4 cm. long and 3 mm broad.

4. CHEMICAL COMPOSITION

Analysts examining its restorative properties found that it contained a gathering of alkaloids that, however incredibly lethal, had potential uses in malignant growth treatment. Plants have the capacity to integrate a wide assortment of synthetic mixes that are utilized to perform vital natural capacities, and to guard against assault from predators, for example, insects, fungi and herbivorous creatures. *C. roseus* possess starch, flavinoid, saponin and alkaloids.

Alkaloids are the most possibly dynamic compound constituents of *Catharanthus roseus*. In excess of 400 alkaloids are available in the plant, which are utilized as pharmaceuticals, agrochemicals, season and aroma, fixings, nourishment added substances and pesticides. The alkaloids like actineo plastidemic, Vinblastine, Vincristine, Vindesine, Vindeline Tabersonine and so forth are chiefly present in aerial parts while ajmalicine, vinceine, vineamine, raubasin, reserpine, catharanthine and so forth are available in roots and basal stem. Rosindin is an anthocyanin shade found in the flower of *C. roseus*. [4]

4.1 Anticancer Actions

The anticancer alkaloids Vinblastine and Vincristine are derived from stem and leaf of *Catharanthus roseus*. These alkaloids have growth restraint impact to some human tumors. Vinblastine is utilized tentatively for treatment of neoplasmas and is prescribed for Hodgkins disease, chorio carcinoma. Vincristine another alkaloids is utilized for leukemia in youngsters. Diverse level of the methanolic rough concentrates of *Catharanthus* was found to demonstrate the critical anticancer action against various cell types in the in vitro condition and particularly most noteworthy action was found against the multidrug safe tumor types. Vinblastine is sold as Velban or Vincristine as oncovin. [5,6]

4.2 Anti-Diabetic Action

The ethanolic concentrates of the leaves and of *C. roseus* demonstrated a dose dependent lowering of blood glucose in comparable to the standard drug. Bringing down of glucose in comparable to the standard drug glibenclamide. The *Catharanthus roseus* poglycemic impact has showed up because of the after-effect of the increased glucose usage in the liver.

The watery concentrate was found to bring down the blood glucose of about 20% in diabetic rodents when contrasted with that of the dichloromethane and methanol extricates which brought down the blood glucose level to 49-58%. The hypoglycaemic impact has showed up due to the after-effect of the increased glucose usage in the liver hypoglycaemic action of alkaloids disengaged from *C. roseus* have been considered pharmacologically and



a cure inferred from the plant has been showcased under the proprietary name Vinculin as a treatment for diabetes.

4.3 Anti-Microbial Action

Rough concentrates from various parts of the plant was tried for against bacterial action. Concentrate from leaves appeared essentially higher adequacy. The anti-bacterial action of the leaf concentrate of the plant was checked against microorganism like *Pseudomonas aeruginosa* NCIM2036, *Salmonella typhimurium* NCIM2501, *Staphylococcus aureus* NCIM5021 what's more, was discovered that the concentrates could be utilized as the prophylactic specialist in the treatment of a large number of the illness. [10]

4.4 Anti-Oxidant Property

The anti-oxidant capability of the ethanolic concentrate of the roots of the two assortments of *C. roseus* to be specific *rosea* (pink bloom) what's more, *alba* (white bloom) was obtained by utilizing different arrangement of assay, for example, Hydroxyl radical-scavenging action, superoxide radical-rummaging action, DPPH radical-rummaging action and nitric oxide radical restraint strategy.

The outcome got demonstrated that the ethanolic remove of the roots of Periwinkle varieties has shown the acceptable scavenging impact in the whole assay in a concentration dependent way however *C. roseus* was found to have more cancer prevention action than that of *C. alba*. [11]

4.5 Anti-Helminthic Actions

Helminthes diseases are the incessant sickness, influencing individuals and steers. *Catharanthus roseus* was found to be utilized from the traditional period as an antihelminthic specialist. The anti-helminthic property of *C. roseus* has been assessed by utilizing *Pheretima posthuma* as an exploratory demonstrate and with Piperazine citrate as the standard reference. The ethanolic extract of concentration of 250 mg/ml was found to demonstrate the huge anti-helminthic action. [12]

4.6 Anti-Ulcer Property

Vincamine and Vindoline alkaloids of the plant indicated antiulcer property. The alkaloid vincamine, present in the plant leaves indicates cerebrovasodilatory and neuroprotective action. The plant leaves demonstrated for anti-ulcer action against tentatively incited gastric damage in rodents. [13]

4.7 Hypotensive Property

Concentrate of leaves of the plant made critical improvement in Hypotensive property. The leaves have been known to contain 150 valuable alkaloids among other pharmacologically dynamic mixes. Critical antihyperglycemic and hypotensive movement of the leaf separates (hydroalcoholic or dichloromethane-methanol) have been accounted for in lab creatures. [14]

4.8 Anti-Diarrheal Property

The anti-diarrheal activity of the plant ethanolic leaf separates as tried in the wistar rodents with castor oil as an experimental loose bowels prompting agent in addition to the pretreatment of the extricate. The anti-diarrheal impact of ethanolic separates *C. roseus* demonstrated the dose dependant hindrance of the castor oil instigated diarrhea. [15]

5. CONCLUSION

Restorative plant is the most selective source of life saving medications for lion's share of the world's populace. They keep on being a vital restorative guide for easing the afflictions of humans. Huge numbers of the conventional medications were utilized without understanding the essential mechanism; their impact could be demonstrated further with the assistance of the present innovation and apparatuses. The dynamic compound that is in charge of the pharmacological impact could be found easily and furthermore marketed as a medication item itself with appropriate endorsement from the respective organizations.



Catharanthus roseus was examined from the ancient times for their phytochemical and their restorative actions. *Catharanthus roseus* is one of the 21000 essential restorative plants found. It is utilized to treat various diseases for example, diabetes, sore mouth, mouth ulcers, and leukemia. It creates around 130 alkaloids, for example, reserpine, vinceine, raubasine and ajmalicine. Anticancer activity is shown by vinblastine and vincristine.

Distinctive parts of this plant deliver diverse amounts of alkaloids, out of which root bark delivers the most extreme for example almost 1.79%. There are a number of reports supporting its anti-microbial activity against *Staphylococcus albus*, *Bacillus megatarium*, *Shigella*, *Pseudomonas*, and so forth. Its antioxidant and antimutagenic impacts have additionally been reported. Further examinations should be done to investigate its antitumor impacts.

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