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## CATHARANTHUS ROSEUS (SADABAHAR): A BRIEF STUDY ON MEDICINAL PLANT HAVING DIFFERENT PHARMACOLOGICAL ACTIVITIES

Shadab Ali<sup>1</sup>, Nasiruddin Ahmad Farooqui<sup>1</sup>, Shamim Ahmad<sup>1</sup>, Mohd Salman<sup>1</sup> and Suraj Mandal<sup>2</sup>

<sup>1</sup>Translam Institute of Pharmaceutical Education and Research, Meerut, Uttar Pradesh, India, 250001

<sup>2</sup>Pt. Rajendra Prasad Smarak College of Pharmacy, Campus- Kajri Niranjanpur, Khutar Road, Puranpur, Pilibhit, Uttar Pradesh, India, 262122

Corresponding Author Email- sk8006721807@gmail.com

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### ABSTRACT

Ayurveda is an Indian method of adjusting treatment according to the clinical potential of the plant. *C. roseus* (Madagascar periwinkle) is a wonderful herb from Ayurveda. It is known for its antitumor, diabetic, antibacterial, oxidative antagonism and mutagenic effects. The island of Madagascar is the greenery that inhabits the island. The colors range from pink to purple, and the leaves are inverted. It produces about 130 alkaloids. Most of them are alymalicin, vinsane, reserine, vincristine, vinblastine, and laubacin. Vincristine and vinblastine are used to treat a variety of dangerous conditions, including Hodgkin's disease, breast disease, dangerous skin growth, and lymphocytic leukemia. It is an endangered species that should be monitored using techniques such as micro transplantation. All in all, there are many useful properties to be investigated.

**Keywords :** *Catharanthus roseus*, alkaloids, vinblastine, vincristine, anti-cancer

### INTRODUCTION

Medicinal plants have a long history of use in conventional medication. Ethno-local data on helpful plants and their use by neighbourhood social orders is significant in the protection of standard social orders, biodiversity, network clinical thought and medication improvement. *C. roseus* (Periwinkle Madagascar), alkaloids, vinblastine, vincristine, anticancer agent Periwinkle Madagascar L. (G.) Don is a large speckled medicinal plant of the Apocynaceae family. These vascular spermatozoa are binary vascular spermatozoa that combine two indole-terpene alkaloids, vinblastine and vincristine, which are used to stop harmful vibrations (Ajaib *et al.* 2010). In 1910, Pecourt described the use of leaves, mouthwash for toothache, and continuous dental decay treatment and irrigation to combat childbirth and scurvy in Brazil. In Europe, related species are used as masks to restrict milk production. It has been used to treat diabetic ulcers in the British West Indies and has been recognized as an excellent teacher of oral hypoglycemia in the Philippines. Recently Chopra *et al.* Absolute alkaloids reported the development of internal and persistent hypotension, as well as a limited increase in antimicrobial activity. *Catharanthus roseus* (Madagascar periwinkle) is commonly known as Nayantara or Sadabahar (Dr. Hemamalini Balaji *et al.* 2014).

### Scientific classification:

**Botanical Name(s) :** *Vinca rosea* (*Catharanthus roseus*)

**Family :** Apocynaceae

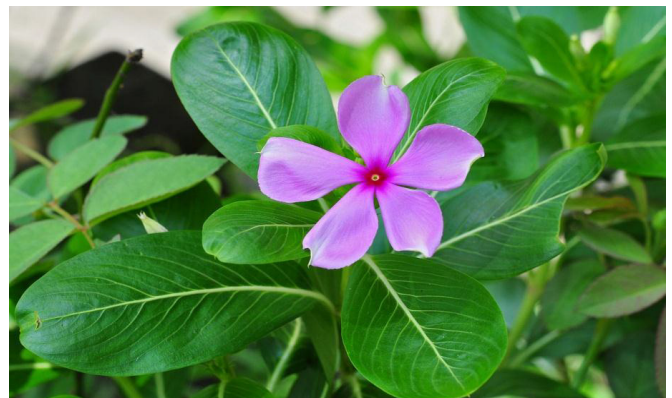
**Kingdom :** Plantae

**Family :** Apocynaceae

**Genus :** *Catharanthus*

**Species :** *roseus*

**Synonyms :** Cayenne jasmine, sadabahar, nityakalyani, sadaphool, rasna, sadampuspa, Barmasi, noyontara, periwinkle (Erdogru *et al.*, 2002)



**Fig. 1:** *Catharanthus roseus*

### Morphology

- Permanent herbaceous plant (*Catharanthus roseus*) up to 1 m high.
- The leaves are oblong, 1-3-3 cm long handle and 2.5-9.0 cm. long.
- It is inverted green, with a yellow center in the middle, and the stem is about 1 ~ 1.8cm.
- You have been in the opposing group for a long time.
- White to pale pink flowers with pale red spots have a basal thread with 5 pointed petals.
- The natural element consists of several hair follicles 3 mm wide and 2-4 cm wide long (Bennouna *et al.*, 2008).

### Geographical distribution

- *Catharanthus roseus* is found in the Indian Ocean near Madagascar.
- The plant was discovered as an endangered wild plant and the main reason for its decline was the logging and destruction of radiation farms, but it is now common in many tropical and subtropical regions of the world, including the southern United States. Standard (Banskota *et al.*, 2005).

### Potentially anticipated nutrients

- Experts studying beneficial properties have found a social affinity for alkaloids. Alkaloids are harmful, but they must be used to treat diseases.
- Plants can reach normal levels and control the various activators used to protect themselves from attack by tracers such as insects, pests and herbivores. worth Rose starch, flavonoids, saponins, alkaloids. Alkaloids are the most surprising substances in Madagascar periwinkle production.
- Plants are rich in 400 alkaloids used in cooking, pesticides, flavorings, ornaments, food additives and pesticides.
- Alkaloids such as actinio plast dammer, vinblastine, vincristine, bindidin and bindalintabersin.
- Rosindin is an anthocyanin found in blue skin.

**Vincristine**, also known as Leuro-Cristine and sold under the brand name Oncovin, is a chemotherapy drug used to treat a variety of malignancies. It is associated with atypical lymphocytic leukemia, atypical myeloid leukemia, Hodgkin infection, neuroblastoma, and small cell degradation of the lung (Fig. 2) (Hejaz *et al.*, 2006).

**Vinblastine (VBL)**, sold under the Welban brand name, is a widely used chemotherapy drug in many prescriptions for the treatment of various dangerous types. It is in line with Hodgkins lymphoma, small cell destruction of the lung, bladder risk, cortical disease, melanoma, and testicular malformations (Fig.3) (Ravina *et al.*, 2011)

**Vindesine** is a made subordinate of vinblastine, a typically happening vinca alkaloid. Vindesine binds to and settles tubulin, thusly barging in on tubulin polymerization and preventing the game plan of the mitotic shaft and cell division; treated cells can't go through mitosis and are caught

in metaphase. This expert similarly upsets macromolecular blend (Fig. 4) (Mondal *et al.*, 2019).

**Tabersonine** is a monoterpene indole alkaloid with cytotoxic development. It has a section as an antineoplastic subject matter expert and a metabolite. It is an alkaloid ester, a monoterpene indole alkaloid, a methyl ester and a characteristic heteropentacyclic compound. It is a structure base of a tabersoninium (Fig. 5) (Leeuwenberg *et al.*, 1985)

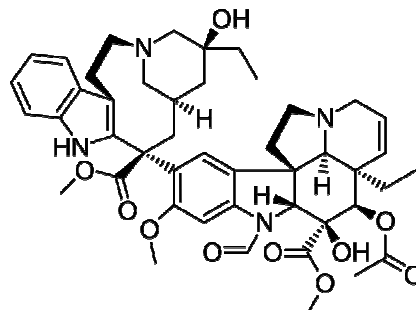


Fig 2: Vincristine

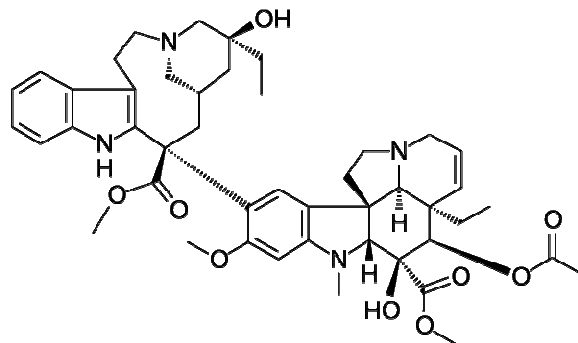


Fig 3: Vinblastine

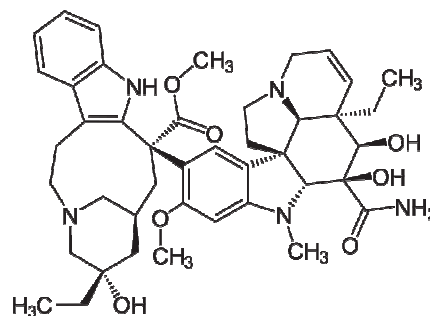


Fig 4: Vindesine

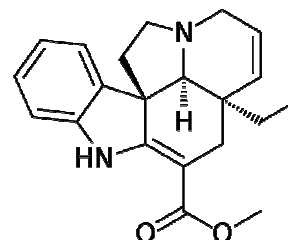


Fig 5: Tabersonine

### Pharmacological Activities

**Antagonistic to threat development (Anti-cancer activity):** Vinblastine is probably used to treat oncology and is recommended for Hodgkin's infection, placental cancer. Vincristine is another alkaloid used to treat childhood leukemia. The apparent level of abrupt concentrations of

methanol in Catalan has shown tremendous progress in the fight against cancer, with the most severe activity against multiple cell types, particularly multiple types of multidrug-resistant tumors. Volban Vinblastine or Vincristine is marketed as Oncovin (Banskota *et al.*, 2002; Wang *et al.*, 2004).

**Diabetes risk (anti-diabetic effect):** Ethanol C from leaf and plant concentrates. Rhesus monkeys exhibit a distribution of functions that the standard drug glucose does not recognize. Baseline glucose was reduced with the standard drug glibenclamide.

The Hypo glycemic influence has appeared because of the result of the increase glucose use in the liver. The fluid concentrate was found to chop down the blood glucose of about 20% in diabetic rodents when wandered from that of the dichloromethane and methanol kills which brought the blood glucose level down to 49-58%. The hypoglycemic impact has appeared because of the inevitable result of the all-encompassing glucose use in the liver. The hypoglycemic action of alkaloids disengaged from *C. roseus* have been thought pharmacologically and a fix got from the plant has been advanced under the propriety name Vinculin as a treatment for diabetes (Chattopadhyay *et al.*, 1995; Singh *et al.*, 2001; Chattopadhyay *et al.*, 1994).

**Against microbial activity (Anti-microbial activity):** Rough thinks from various pieces of the plant was sought after for threatening to bacterial movement. Concentrate from leaves showed essentially higher adequacy. The counter bacterial advancement of the leaf concentrate of the plant was checked against microorganism like *Pseudomonas aeruginosa* NCIM2036, *Salmonella typhimurium* NCIM2501, *Staphylococcus aureus* NCIM5021 and was tracked down that the concentrates could be utilized as the prophylactic master in the treatment of a noteworthy piece of the difficulty (Prajakta Patil *et al.*, 2010).

**Antagonistic to oxidant property (Anti-oxidant property):** The counter oxidant limit of the ethanolic concentrate of the foundations of the two blends of *C. roseus* explicitly rosea (pink fledgling) and alba (white sprout) was gotten by utilizing distinctive approach of investigate, for example, Hydroxyl fan rummaging movement, uperoxide reformist glancing through action, DPPH revolutionary searching turn of events and nitric oxide fan limitation strategy. The outcome acquired displayed that the ethanolic concentrate of the foundations of Periwinkle groupings has shown the extraordinary searching influence in the whole test in a middle subordinate way yet *C. roseus* was found to have more cell support improvement than that of *C. alba* (Alba Bhutkar *et al.*, 2011).

**Against helminthic development (Anti-helminthic activity):** Helminthes contaminations are the consistent ailment, affecting people and dairy cows. *Catharanthus roseus* was discovered to be utilized from the standard time span as an adversary of helminthic topic master. The counter helminthic property of *C. roseus* has been overviewed by utilizing Pheretimaposthuma as an exploratory model and with Piperazine citrate as the standard reference. The ethanolic concentrate of the centralization of 250 mg/ml was found to show the epic enemy of helminthic advancement (Swati Agarwal *et al.*, 2011).

**Against ulcer property (Anti-ulcer activity):** Vincamine and Vindoline alkaloids present in plants have anti-

inflammatory properties. Vincamine, an alkaloid found in plant leaves, dilates blood vessels and protects them from light. Plant leaves have been shown to resist lesion progression to possible rodent malnutrition (Babulova *et al.*, 2003).

**Hypotensive property:** Concentrate of leaves of the plant completed essential improvement in hypotensive. The leaves have been known to contain 150 obliging alkaloids among other pharmacologically remarkable blends. Essential antihyperglycemic and hypotensive improvement of the leaf disconnects (hydroalcoholic or dichloromethane-methanol) have been addressed in research office creatures (Pillay *et al.*, 1959).

**Antagonistic to diarrheal property:** The counter diarrheal action of the plant ethanolic leaf eliminates as endeavored in the wistar rodents with castor oil as an exploratory free inside actuating master in spite of the pre treatment of the concentrate. The counter diarrheal impact of ethanolic disposes of *C. roseus* showed the piece dependant limit of the castor oil provoked separation of the internal parts (Mithun Singh Rajput *et al.*, 2011).

**Wound recovering property:** Rodents treated with 100 mg/kg/day of the *Catharanthus roseus* ethanol separate had fast of twisted withdrawal all around diminished epithelization period, huge expansion in dry weight and hydroxyproline substance of the granulation tissue when separated and the controls. Contorted withdrawal close by broadened adaptability and hydroxyproline content help the utilization of *C. roseus* in the association of wound fixing (Nayak *et al.*, 2007).

**Hypolipidimic sway (Hypolipidimic effect):** In assessment, gigantic foe of atherosclerotic movement as proposed by decrease in the serum levels of complete cholesterol, oily substances, LDL-c, VLDLc and histology of aorta, liver and kidney with the leaf juice of *Catharanthus roseus* (Linn.) G. Donn. Might have occurred because of the cell support impact of flavonoid, and obviously, vinpocetine like compound present in leaf juice of *Catharanthus roseus* (Linn.) G. Donn (Patel *et al.*, 2011).

**Memory improvement activity:** Vinpocetine has been addressed to have an assortment of activities that would theoretically be productive in Alzheimer's infirmity (AD). The solitary appraisal exploring this master in an especially portrayed accomplice of AD patients found no advantage. Meta-assessment of more settled assessments of vinpocetine in deficiently portrayed dementia masses examined that there is lacking proof to help its clinical use as of now. Vinpocetine has been all through endured at dosages up to 60 mg/d in clinical groundworks of dementia and stroke, and no gigantic contradicting occasions (Sekar *et al.*, 1996).

## CONCLUSION

Therapeutic plants were the strong wellspring of different novel medicine things that shows act causing amazing pharmacological impact on people. Possibly than utilizing the results causing substance quiets, the obsolete solution could be investigated to see the novel medication definitions that are generally the more wonderful with lesser results what's more moderate expense. Regardless, colossal amounts of the standard solutions were utilized without understanding the fundamental portion, their impact could be shown further with the assistance of the current turn of events

and instruments. The incredible compound that is answerable for the pharmacological impact could be found enough furthermore supported as a remedy thing itself with appropriate guaranteeing from the individual affiliations. *Catharanthus roseus* is one of the 21,000 main support plants in existence. It is used to treat various diseases such as diabetes, mouth ulcers, mouth ulcers and leukemia. It produces about 130 alkaloids such as reserpine, vinceine, raubasin and ajmalcine. Vinblastine and Vincristine counteract the effects of leukemia. Various alkaloid bands are produced in different compartments of this plant. For example, root husks are at their best at 1.79%. Several reports support the effects on *Staphylococcus albicans*, *Bacillus major*, *Shigella*, *Pseudomonas*, etc. More studies are needed to evaluate the effectiveness of tumour suppressors.

### Conflict of Interest

The author has declared that no conflicts of interest exist.

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### Ethical Approval

Not required.

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