

Vinca (*Catharanthus roseus*) the "Periwinkle" classification and pharmacological activity: A review

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Abstract

Catharanthus roseus linn is a immortal plant. It is identified for its anti- microbial, anti-Oxidant, anti-tumor and anti-mutagenic effect. *Catharanthus rosea* is an medicinal property belongs to family Apocynaceae. It is cultivated in South Africa, India, U.S.A, Europe & Australia. It is also Cultivated in tropical & Subtropical area / region. *Vinca rosea* was used for treatment of diabetes in jamaica. The leaves of *vinca rosea* is green and roots is pale grey in Color. About 90 alkaloids have been isolated from *vinca* like Ajmalicine, Serpentine are known & present in other species of Apocynaceae. The important alkaloids in *Cathranthus* are the dimer indole indoline alkaloids vinblastine and Vincristine& they possess anticancer activity. In indole monomeric alkaloids includes Vindoline and Catharanthine. In this review including the pharmacological activity and also morphology, taxonomy. This review is an hard work to collect these chemical constituent, uses, synonyms, cultivation, morphology of *vinca* is an vast information the literatures on *vinca*.

Keywords: periwinkle, anticancer, antifungal, *Rosea*, *Vincristin*, vinblastine

Introduction

Currently medicinal plants are used to cure and prophylaxis of several disorders, illness, etc. Essential medicinal products are won't to enhance the health maintainance. *Vinca* have wide range of pharmacological properties such as anticancer, antioxidant, antifungal, antibacterial, and antiviral activity. *Catharanthus roseus* consists more than 130 various types of alkaloids and asl the leaves of *catharanthus roseus* consists of 70 various chemical compounds which are serpentine, ojmalicine and Serpasil. *Catharanthus rosea* (L) is known as *vinca rosea* which is evergreen herb belongs to family Apocynaceae. *Catharanthus roseus* is a Greek word, obtained from *catharanthus* means pure flower and *roseus* means red, rose or rosy. There are two main terpene indole alkaloid which are used to synthesize *vinca* plant: vincristine (used in childhood leukemia); vinblastine (used for chemotherapeutic regime). *Catharanthus roseus* used in wound healing property, to improve memory, in blood pressure, asthma, to cure cancer, skin disorders, dyspepsia, etc.

vinca alkaloids are a material of a class of hydrocarbons which are combined with carbon, hydrogen, nitrogen and oxygen. *Vinca* alkaloids are earned from Madagascar periwinkle plant. They are surprisingly meterialize or artificial or cellular nitrogenous bases evoke from pink periwinkle plant *catharanthus roseus* G. Don. *Vinca* alkaloids are used to cure diabetes, high blood pressure. *Vinca* alkaloids are cancer fighters [3, 4, 5, 6, 7].



Fig 1: *Vinca* plant

Table 1: Synonyms

Periwinkle
Red periwinkle
Catharanthus roseus

Table 2: Vernacular Names

English	Cayenne, Jasmine
Hindi	Sadabahaar
Marathi	Sadaphuli
Sanskrit	Rasna
Gujarat	Barmasi
Bengali	Noyontara
Tamil	Cutkattumulli

Morphological character

Catharanthus roseus is a perennial small herb or sub shrub, upto 99cm in length. Stem is erect. Leaves are simple, cauline, opposite, petiolate elliptic ovate to oblong, 4-10cm by 2-4 cm *Catharanthus roseus* commonly known as bright eyes, cape periwinkle, old maid, pink periwinkle, rose periwinkle. It is native and endemic to madagaskar but grown elsewhere as an ornamental and medicinal plant. The flowers are white and dark pink with a dark red center ^[1, 2].

Taxonomy ^[3]:**Table 3**

Kingdom	Plantae
Division	Magnoliophyta
Class	Magnoliopsida
Order	Gentianales
Family	Apocynaceae
Genus	Catharanthus
Species	Roseus

Cultivation of vinca

Catharanthus roseus plants set out to early in cold wet soil will deliver the sickly performance after all these are hot weather annuals. Southern location.

Vinca grows in sandy loam soil in a Sunny location. It also survive in when it sprinkles with water weekly. Plant *vincas* in raised beds or containers with a poures, well draining potting mix. Plants requires moisture and humid weather. These plants are propagated by cutting. The rooted cuttings in potting soil in late winter and grow them in nursery plants to set out when the weather warms. Propagation of *vinca* is also done by seeds. Collect the *vinca* seeds long, narrow, green seed pods hidden on the stem beneath blooming flowers. Drop the pods into a paper sack and place them in warm and dry spot. Shake the bag everyday upto they are completely dry. When seeds are completely dry remove the tiny black seeds. Place the seeds in paper envelope and store them in Cool, dry and well ventilated location until planting time. Cover the seeds lightly with soil and cover with damp news paper over the tray because it requires darkness. Place the seeds where temperature are around 80 F (27° C). Check the tray daily and remove the newspaper as soon as seedlings emerged. It come out in 2-9 days at that time they placed in bright sunlight and room temperature upto 75 F (24° C). *Vinca* seeds grown by sowing in Pot, container and flower bed. Before sowing the seeds soil make slightly moist. Seeds are sown 0.5 cm deep and covered with fine layer of soil. Immediately after sowing the seeds sprinkle is used for watering. This plants are requires minimum 30-45 cm distance between them. After seed sowing flowering take place in about 1.5 - 2 months ^[1, 4].



Fig 2: Cultivated product of Vinca.

Chemical constituent

The major constituents are vincristine and vinblastine.

Other's are ajmalicine, serpentine, lochnerine, tetrahydrostain^[3].

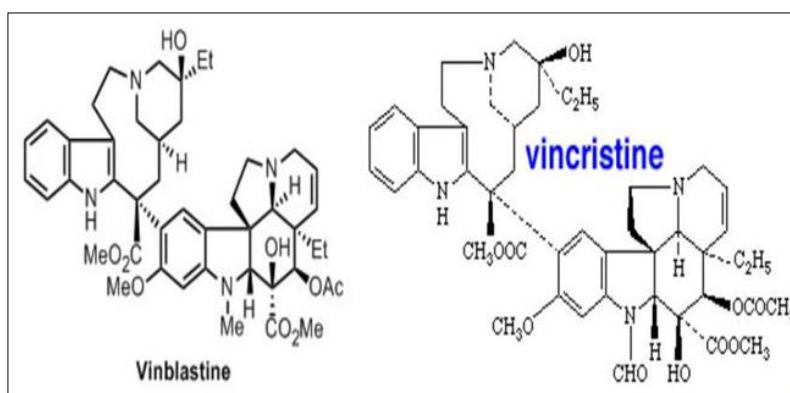


Fig 3: structures of chemical constituent. In vinca

Pharmacological activity

a. Antineoplastic activity

The leaves and stems of vinca are the source of alkaloids. Thia have anti-cancer and antitumor property.

Vinca alkaloids inhibit the tumor.

vinca alkaloids are antineoplastic agent, originally it derived from "catharanthus roseus"

they are antibiotic chemotherapy drugs that are work by interfering with polymerization of tubulin, a protein responsible for building the microtubule system which appears during cell division in the metaphase by binding tubulin and preventing it's polymerization into microtubules.

It is also called mitotic spindle position they inhibit metaphase of microtubules which inhibit mitosis in cell division.

Hence, vinca alkaloids helps to preventing the cancer cell Uses- 1) vinblastin is used to treat the Hodgkin's and non-hodgkin's lymphomas.

2) vincristine is used to treat acute lymphoblastic leukaemia in children (type of cancer of the blood and bone narrow)

* vindesine and vinorelbin is a semisynthetic vinka alkaloid which similar properties and that mainly used to treat breast cancer.

b. Antidiabetic activity

Vinca rosea have good antidiabetic activity.

Alcoholic extracts of vinca rosea exhibit significant of antihyperglycemic activity.

the condition of diabetic mellitus as indicated by parameter like body weight and lipid profile along with serum creatinine, serum urea. it increases glucose utilisation in liver the renewal of beta cell in diabetes have been studied in several animal models it found mentholic whole plant extract at high dose (500mg/kg) is more than whole plant extract at low dose (300mg/kg) after 14 days treatment.

c. Antimicrobial activity

The antimicrobial activity of vinca rosea was evaluated against pathogenic bacterial strains and fungal strains using agar well diffusion method.

vinca plant also have natural chemotherapeutic agents which show broad spectrum with the greatest force on the preventive activity.

d. Hypolipidemic activity

The reduction of serum levels that is cholesterol, LDL- c (low density lipoprotein cholesterol), triglycerides which is anti - atherosclerotic activity found by the leaf juice of vinca.

e. Antioxidant property

vinca has a protective role and act as a good antioxidant activity along with effective antidiabetic effect this property are mainly found in the roots, pink and white flowers of vinca which have ethanolic extract

f. Anti-diarrheal property

The ethanolic extract from the aerial part of vinca major was evaluated for the antidiarrheal activity in rats the quantity of those which reduced or block the diarrhoea property it is 200 and 500 mg / kg as well as it inhibit the thrust charcoal meal.

The classic use of vinca is to treat and control of diarrhoea

g. Hypotensive property

the leaves of vinca roseus have hypotensive property this leaves contain 150 usefull alkaloids and other componets which have pharmacological active compounds ^[3].

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Conclusion

We have obtain most important and useful knowledge about ((vinca (Catharanthus roseus) the "periwinkle" classification and Pharmacological activity: A review).

Vinca is the mostly available plant and useful for cancer. They are also used for to treat diabetes, high BP, and also anticancer.

Therefore more should be done in study culture, cultivation, morphology, harvesting, taxonomy, and use of their important inclusion.

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