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REVIEW ON: MEDICINAL PLANT: VINCA.

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ABSTRACT

Indian traditional system of drug ayurveda which focuses on the medical eventuality of shops. Medical shops have so numerous uses. The four major vinca alkaloids used in colourful cancer chemotherapies are vinblastine, vincristine (or semisynthetic derivations), vindesine, and vinorelbine from which two natural composites, vinblastine and vincristine and two semi-synthetic derivations, vindesine and vinorelbine. They're naturally uprooted from the factory and have hypoglycemic and cytotoxic effects. They used to treat cancer, diabetes. Vincristine is a chemotherapeutic agent administered in combination with other medicines similar as methotrexate use for the treatment of malice (e.g., carcinoma and leukemia). Vinca alkaloids are having toxic conditioning have physiological goods too that makes them useful as drugs.

INTRODUCTION

Catharanthus roseus, generally known generally known as bright eyes, Cape periwinkle, graveyard, Madagascar periwinkle, old maid, pink periwinkle rose periwinkle, is a species of unfolding factory in the family Apocynaceae. It's native and aboriginal to

Madagascar, but grown away as a cosmetic and medicinal factory. It's A source of medicines vincristine and vinblastine, used to treat cancer [1] It was formerly included in formerly, Vinca as Vinca rosea Medicinal shops have a long history of operation in traditional drug. Ethno-

botanical information on medicinal factory and their operation by indigenous societies is useful in the conservation of traditional societies, health care and medicine development. *Catharanthus roseus*. (G) Don is

an important medicinal factory belonging to the Apocynacea family; this factory is a dicotyledonous angiosperm and conflation two terpene indole alkaloids vinblastin and vincristine that are used to fight cancer [2]



Fig.No.01: *Catharanthus Roseus*.

SCIENTIFIC NAME

Botanical name: -*catharanthus roseus* (Linnaeus)

Domain: -Eukarya: eukaryotes.

Kingdom: -plantae: plants.

Subkingdom: -Tracheobionta: vascular plants.

Subdivision: -Spermatophyte: seed plants.

Division: -Magnoliophyta: flowering plants.

Class: -Magnoliopsida: dicotyledon.

Subclass: - Asteridea.

Suborder: -Gentiananae.

Order: -Gentianales.

Family: -Apocynaceae.

Subfamily: -Rauvolfioideae.

Tribe: - Vinceae.

Genus: - *Catharanthus* G. Don.

Species: -*Roseus*, [3]

VERNACULAR NAMES

English: cayenne jasmine, old maid, periwinkle.

Hindi: sada-bahar, sadabahar.

Kannada: batla hoo, bili kaasi kanigalu,

ganeshana hoo, kempu kaasi kanigalu.

Malayalam: banappuvu, nityakalya, savanari.

Marathi: sadaphool, sadaphul, sadaphuli.

Sanskrit: nityakalyani, rasna, sadampuspa,

sadapushpi.

Tamil: cutkattu malli, cutukattu malli,

cutukattuppu.

Telugu: billaganneru.

Gujarati: Barmasi.

Bengali: noyontara, ^[4]

HISTORY

Peckolt, in 1910, described the use in Brazil of an infusion of the leaves to control haemorrhage and scurvy, as a mouthwash for toothache, and for the mending and cleaning of habitual injuries. In Europe affiliated species have been used for the personal repression of the inflow of milk. In the British West-Indies it has been used to treat diabetic ulcer and in has been reported as being an effective oral hypoglycaemic an agent.

More lately, Chopra et al. have reported that the total alkaloids retain a limited antibacterial exertion as well as a significant and sustained hypotensive action. The hypoglycaemic and antibacterial conditioning haven't been verified, although one of the alkaloids insulated from this factory, ajmalicine, has been reported to retain flash depressor action on arterial blood pressure ^[5]

MORPHOLOGY

- Vinca is an erect, ever blooming hue or under shrub which is woody at the base. It is 4080 cm height. The flower are violet, pink or White in colour. The leaves are opposite, oblong and petiolate with entire margins and fruits are divergent follicles,
- Catharanthus roseus is a perennial small herb or sub-shrub, up to 90 cm in height.
- Stem is erect, lax branching with flexible long branches, purple or light green.
- Leaves are simple, cauline, opposite, exstipulate, petiolate, elliptic ovate to oblong, 4-10 by 2-4 cm globous to pubescent, base acute or cuneate, apex obtusely apiculate and lateral nerves 10- 12 pairs.
- Petiole in 1.0 cm. Catharanthus Roseus in a evergreen sub-herb or herbaceous plant growing to 1mm tall, [6]



Fig.No.02 : Morphological Features Of Leaf, Steam, Flowers, Fruits.



Fig.No.03 : Morphological Features of Leaf, Stem, Flowers, Fruits.

Geographical distribution

Catharanthus roseus is began from the Indian Ocean Island of Madagascar. It was believed to be an exposed factory in the wild. still in numerous tropical and

tropical regions worldwide, including the Southern United states, it's now a common factory (7, 8).

Chemical constituents :

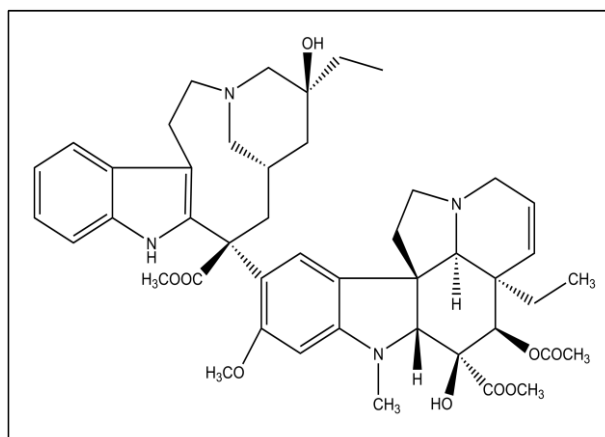
Major being Alkaloids from 0.74 to 0.82%; important being vincristine, vinblastine, catharanthine, vindoline. Other alkaloids viz, deoxy vinblastine, leucosin, pleurisy, leurocristine, leurosidine, vincoline, vinacardine, roseadine, vindolicine, roscine, etc are isolated [9-13].

Vinca alkaloids are having poisonous activities have physiological effects too that makes them useful as medicines. The alkaloids are distributed in all parts of the plant. The maximum being in the root bark particularly during flowering. The physiologically important alkaloids are antineoplastic dimeric alkaloids, vinblastine, vincristine in the aerial parts and ajmalicine,

Vincristine:

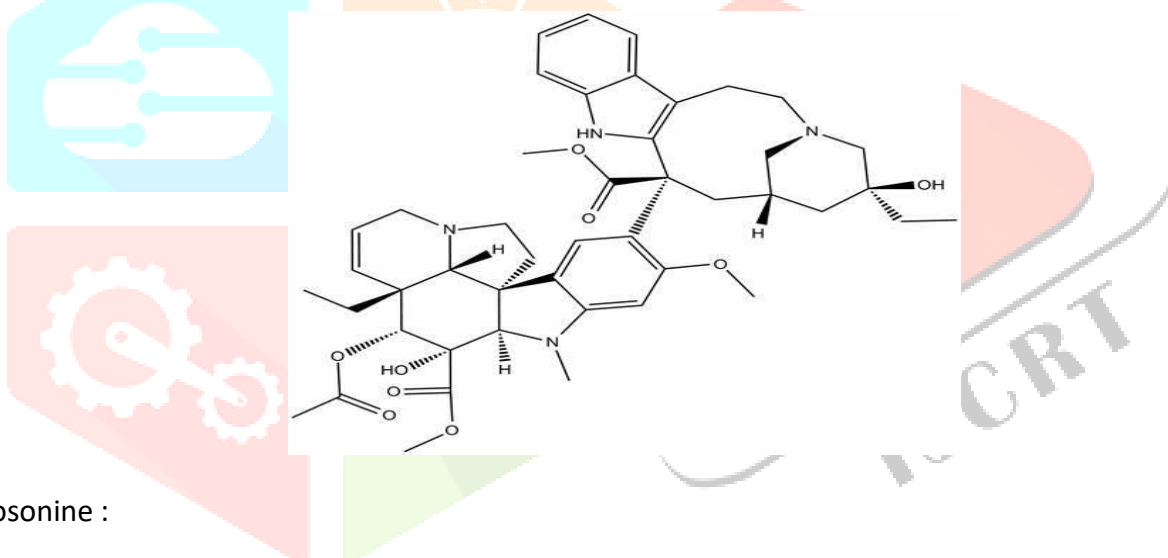
serpentine in the roots. Another alkaloid, vinflunine, not universally accepted except in Europe and said to possess anti-tumour activity. Vinblastine and vincristine are chemotherapy medications used to deal with several types of cancers and are biosynthesised from the linking of the alkaloids catharanthine and vindoline. The newer semisynthetic chemotherapeutic agent vinorelbine is used to deal with non- small-cell lung cancer, can be prepared either from vindoline and catharanthine or from the vinca alkaloid leucosin in both cases via anhydro vinblastine. Rosendin is an anthocyanidin pigment found in the flowers of *C. roseus* [14-17].

vincristine (vincristine sulphate, info in solution, vinyasas; Eli Lilly, Adria; 1, 2 , and 5 mg vials for injection); compared to other drugs, vincristine is inexpensive and well tolerated.



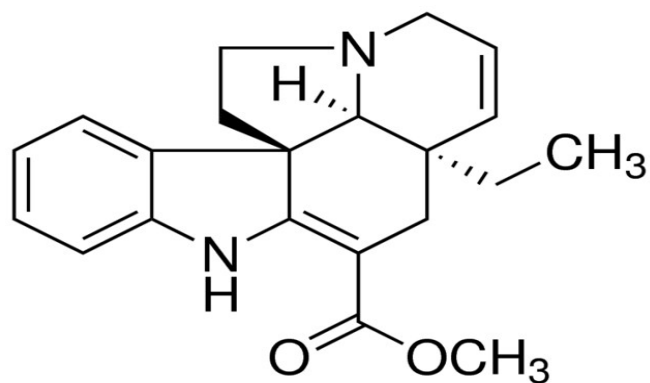
Vinblastine:

Vinblastine is indicated in the treatment of patients with Hodgkins and non-Hodgkin's lymphomas, breast cancer Kaposi's sarcoma, renal cell cancer, cancer and testicular cancer.



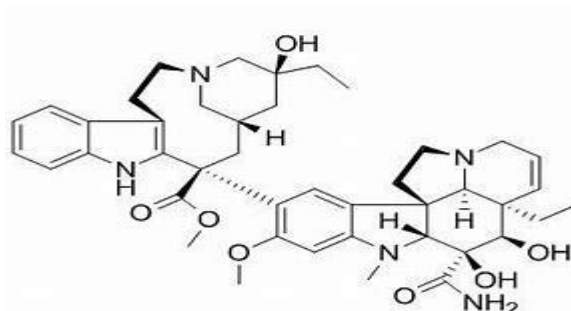
Tabersonine :

Tabersonine is a terpene indole alkaloid found in roseus and also in the genus Voacanga , family Apocynaceae the medicinal plant Catharanthus belonging to the alkaloid-rich.



Vindesine:

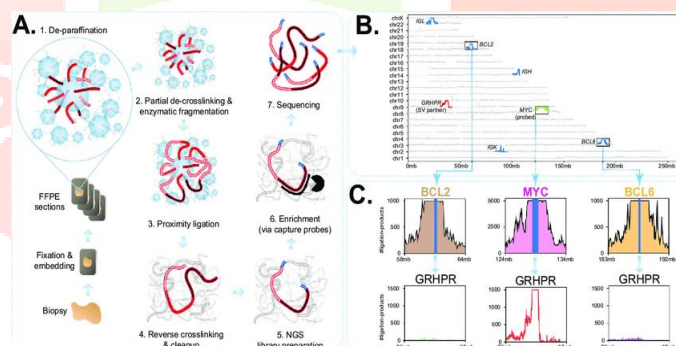
Vindesine, also termed Eldisine, is a semisynthetic vinca alkaloid derived from the flowering plant *Catharanthus roseus*. Like the natural (e.g. vinblastine and vincristine) and semisynthetic vinca alkaloids (e.g. vinorelbine and vinflunine) derived from this plant.



Identification of TLC:

Vinblastine is identified by TLC by spotting standard and sample and developed in mobile phase n-Butanol: Acetic acid: Water: 5:1:1 and spraying

with modified Dragondroff's reagent. R_f value of 0.24 corresponds to Vinblastine in both standard and sample solution track.



Quantitative standards :

Foreign organic matter: Not more than 2.5 %; Ash: Not more than 14.6 %; Acid Insoluble ash: Not more than 1.0 %;

Alcohol soluble extractive: Not less than 12.0 %; Water soluble extractive: Not less than 40.0%

Pharmacological Conditioning-

1) Anti-cancer:

exertion In clinical practice, the administration of *C. roseus* is carried out intravenously, after which they're ultimately metabolized by the liver and excreted. Hair loss, supplemental neuropathy, constipation and hyponatremia are the major side goods of this medicines. To ameliorate the remedial indicator, Semi-synthetic Catharanthus alkaloids similar as vinorelbine and vinflunine were developed. Vinorelbine and vinflunine ply their antitumor effect by binding to tubulin. These alkaloids have growth inhibition affect some mortal excrescences. Vinblastine is used experimentally for treatment of neoplasms and is recommended for Hodgkin's complaint, melanoma *C. roseus* was set up to show the significant anticancer activity against multitudinous cell types in vitro condition and especially topmost exertion was set up against the multidrug resistant excrescence types. Vinca alkaloids also called as mitotic spindle venoms they inhibit assembly of the spindle forms from microtubules, the by inhibiting mitosis in cell cycle. Vinca alkaloids hence successfully help cancer cells from dividing. Different Vinca alkaloids have their own unique parcels [17]

2) Antidiabetic Action:

Hypoglycaemic exertion was set up by using the dichloromethane methanol excerpt (11) of the leaves and outgrowths of *C. roseus* factory in streptozotocin convinced diabetic rat model at the cure of 500 mg/ kg that has been administered orally for 7 and 15 days. 48.6 and 57.6 hypoglycaemic exertion was observed and farther treatment for a period of 30 days has handed complete protection against STZ challenge (75 mg/kg.). Enzymes conditioning of glycogen synthase, glucose 6- phosphate dehydrogenase, succinate dehydrogenase and malate dehydrogenase were set up to be dropped in the liver of diabetic creatures which would be significantly bettered after treatment with extract cure 500 mg/kg. o. for 7 days. Results indicated the increased metabolization of glucose in treated rats with the increased situations of lipid per oxidation. The ethanolic excerpts of the leaves and flower of *C. roseus* revealed that a cure dependent dwindling of blood sugar is analogous to the standard medicine. dwindling of blood sugar in similar to the standard medicine glipalamide. The Hypo glycaemic action has been a rosed due to the result of the increase glucose application in the liver [18- 20].

3) Anti-Microbial Activity:

C. roseus has been discovered to be an important medicinal plant for the creation of the novel pharmaceuticals as most of the bacterial pathogens were improving resistance against many of the available anti-microbial drugs. Plants have been justified to be valuable natural resources for the active chemotherapeutic agents and suggest a broad spectrum of action with the greater emphasis on the preventive action [21]. It is demonstrated that mutant leaf extracts had good antibacterial potential against *S. aureus*, *S. citrus*, and *E. coli* and *P. aeruginosa* bacteria while *B. subtilis* was not influenced. The fluctuation in antibacterial activity between mutant and control plant leaves might be due to the genomic changes, aroused by the mutagen correspondingly influencing the fusion and level of bio-active compounds like vincristine, Vinblastine, vindoline in tissue, which might be obligation for antibacterial property of periwinkle leaves as also reported earlier. [22]

4) Antioxidant Activity:

The antioxidant exertion of *C. roseus* was assured by DPPH assays at distinct attention (200, 400, 600, 800 and 1000 μg). Among the five-attention tested, 800 μg shows the apex antioxidant exertion ^(23,24).

5) Anti Diarrheal Activity:

The in vivo anti diarrheal action of *C. roseus* ethanolic splint excerpt was tested in the Wistar rats with castor oil painting as an experimental diarrhoea converting agent in addition to the pretreatment of the excerpt. Loperamide and atropine sulphate were used as the standard medicines. The antidiarrheal effect of ethanolic excerpt of *C. roseus* showed the cure dependent inhibition of the castor oil painting convinced diarrhoea at the boluses of 200 and 500 mg/ kg. The excerpts significantly reduced the number and weight of wet faecal bullets with excerpt treated groups showing lower diarrheal inflexibility than control rats convinced diarrhoea in Wistar rats. A farther-boluses of 200 and 500 mg/ kg of the excerpt inhibited castor oil painting convinced diarrhoea as well as inhibited gastrointestinal propulsion of water colour mess. This data corroborates the traditional operation of *C. roseus* in the treatment and operation of diarrhoea ^(25,26)

6) Anthelmintic Activity:

Helminthes infections causes habitual conditions in mortal beings and cattle. The evaluation of anthelmintic property of *C. roseus* was carried out by using *Erythema posthuman* as an experimental model and with Piperazine citrate as the standard reference. Significant anthelmintic exertion was observed in the ethanolic excerpt in the attention of 250 mg/ ml with death time of 46.33 min and the standard medicine at 50 mg/ ml was set up to show the death time of 40.67 min This disquisition bears backing to the ethnomedical claims of *C. roseus* as an anthelmintic factory ⁽²⁷⁾.

7) Hypotensive Activity:

Extract obtained from the leaves of the *C. roseus* plant made significant change in hypotensive property. Remarkable antihyperglycemic and hypotensive activity of the leaf extracts (hydroalcoholic or dichloromethane-methanol) have been outlined in laboratory animals ^[28].

8) Wound Healing Property:

The crack mending property was carried out using 100 mg/ kg/ day of *C. roseus* ethanol excerpt in rats. High rate of crack compression was observed which significant drop in epithelization period, pronounced increase in dry weight and hydroxyproline content of the granulation towel as compared with the controls. Crack compression together with increased tensile strength and hydroxyproline content provides substantiation to the use of *C. roseus* in the operation of crack mending ^(29,30).

Conclusion:

Medicinal plants were the potent source of various novel pharmaceutical products that shows ect causing potent pharmacological effect on the human beings. Instead of using the side effects causing chemical drugs, the ancient medicine could be explored to identify the novel drug formulations that are more effective with lesser side effects and also cheaper cost. Though, many of the traditional drugs were used without understanding the basic mechanism, their effect could be proved further with the help of the present technology and tools. The active compound that is responsible for the pharmacological effect could be found very easily and also commercialized as a drug product itself with proper approval from the respective organizations. Catharanthus roseus is one of the 21000 important medicinal plants found. It is used for the cure of a number of diseases such as diabetes, sore mouth, mouth ulcers, and leukemia. It produces about 130 alkaloids such as reserpine, vinceine, raubasin and ajmalcine. Anti-leukemic activity is shown by vinblastine and vincristine. Different parts of this plant produce different amounts of alkaloids, out of which root bark produces the maximum i.e. nearly 1.79%. There are a number of reports supporting its anti-microbial activity against Staphylococcus albusi, Bacillus megatarium, Shigella, Pseudomonas, etc. Its antioxidant and antimutagenic effects have also been reported. Further studies Its anti-oxidant and antimutagenic effects have also been reported. Further studies need to be done to explore its antitumour effects need to be done explore its antitumour effects. Catharanthus roseus is one of the important medicinal herb with numerous biological properties. Lot of work is still in process to identify new bioactive compounds, understanding the methodology of transformation of bioactive compounds in one form to another form, new extraction technique such as green extraction and improving the drying method such as solar drying.

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