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ORIGINAL ARTICLE

Phytochemistry and Pharmacological Activities of *Catharanthus roseus*: A Traditional Spagyric Perspective

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ABSTRACT

In the earth there are near about 350,000 species of plants are found and each plant have a great medicinal value. The plant vinca is also known as catharanthus, sadabahar & baramasi and which is belong from the family of apocyanacae. It produces very beautiful flowers which may be blue, purple and white in colour. The plant is constituent with following chemical constituent but mainly two chemical constituent increases play a vital role in medicinal field. Vinblastine mainly used to treat Hodgkin lymphomas on the other hand vincristine used to treat childhood leukemices. Many time both chemical constituent cause toxic effects in our body such as bone, narrow depression, anurexice, muscle weskness etc. The chemical constituents of vinca bind to the tubulin & prevent the formation of microtubules and block the mithosis in Meta phase. The vinca have lots of medicinal values such as anti-cancer drug, anti-diabetic, anti-microbial and anti-ulcer drug. Vinca can be given as targeted therapy and combination therapy.

Key word: catharanthus, vinblastine, vincristine anti-cancer, spagyric

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INTRODUCTION

Medicinal plants have a long history of usage in traditional medicine. Ethano– Botanical information on medicinal plants and their usage by undigenous cultures is useful in the consernation of traditional cultures, this biodiversity, community healthcare and drug development *Cathranthus roseus* L.(G.) Don, is and medicinal plant belonging to the Apocynacea family, This plant is a dicolyledonous angiosperm and synthesizes two terpene indole alkaloids: Vincristine that are used to fight concer. Pecklot in 1910 described the uses in Brazil of an infusion of the leaves to hemorrhage and scurvey, as a mouthwash for toothache and for healing and cleaning of chronic wounds.

There is increasing demand by patients to use natural products with anti-diabetic activity due to side effects associated with the the use of insulin and oral hypoglycemic agent. Cathranthus roseus produces more then 100 monoterpenoid indole alkaloids (TIA) in different organs.

BOTANICAL CLASSIFICATION

Botanical Name	:	*Vinca Rosea* (*Catharanthus roseus*)
Family	:	Apocynaceae
Kindom	:	Plantae
Division	:	Magnoliopsida
Order	:	Gentianales
Genus	:	Catharanthus
Species	:	*C. roseus*

MATERIAL AND METHOD

The basic plant material of *C.roseus* Linn used for the investigation was obtained from college garden, Agra College, Agra (U.P.) India. The plant was identified authenticated by Department of Botany, Agra College, Agra.

Processing Method

(A) EXTRACTION OF SULPHOR OR VOLATILE CONTENTS OF THE PLANT

This is a process of extaction in which the fresh plant part (whole) to be used. The whole part of plant cut into small pieces and put into the container by which the steam is to be passed, the steam carry all the volatile contents of the plant to the condenser and after condensation we get its parts of the plant that is called Sulphor. Sulphor term is not used for any type of chemical this is only used for the "Pran Vayu" of the plant.

(B) EXTRACTION OF MERCURY

After extraction of 1st part that is sulphor, the rest part of plant from its part to be taken to the 2nd step. It is put for the fermentation at a temperature of room temperature. It varies plant to plant. This fermentation takes place without yeast and sugar and without any buffering agent. This will rest for 17 days to 31 days. After completing of the process of fermentation the liquid part to be filtered out and rest solid part of residue to be allowed for shade drying.

Now the liquid filtered to be distilling for 7 to 10 times to get the 2nd part that is called mercury. Here the mercury term is used for this liquidiated part of the plant. This term is not used for any type of chemical.

(C) EXTRACTION OF SALT PART

The solid residue after shade drying to be burned and ash to be collected after incineration. This ash to be calined in a special apparatus which attain the temperature upto 600^0C and this calcinations process to be completed on a constant temperature within 7 to 10 days.

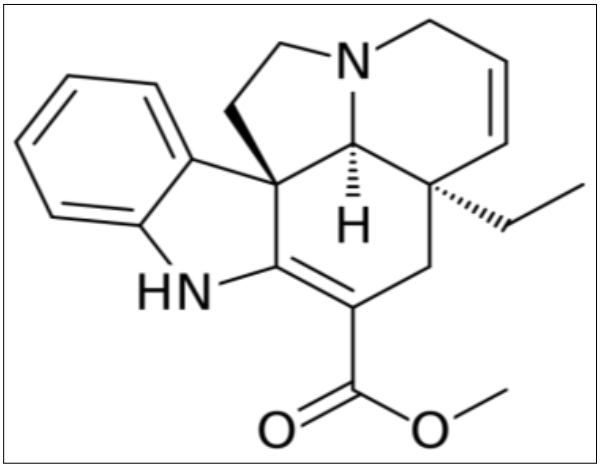
After calcinations this cachinnated material to be dissolved into distilled water and put this dissolvent on a constant heat of 250C to 350C and when the whole distilled water is vaporized then the powder material to be collected from the pot, this is the salt of the same plant.

(D) PROCESS OF GASTATION

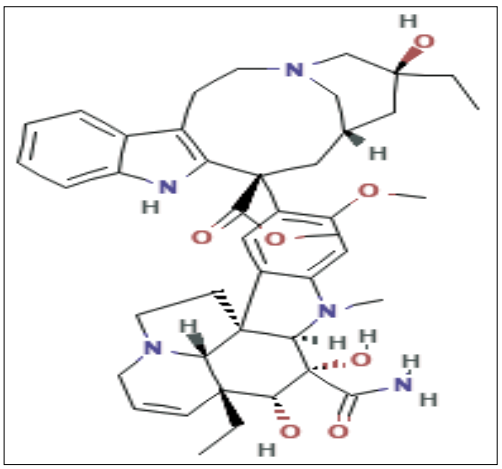
Now all three parts duly collected by the previous three processes that are 1. Sulphor 2. Mercury 3. Salt. All are to be allowed into a container and put it for 10 to 16 days for the gestation. After the process of gestation the whole solution allowed for distillation and distillation will take place for 7 to 10 times. The end material of this process is known as crude form of the plant.

(E) POTENTIALLY ACTIVE CONSTITUENTS

Scientists are investigating its medicinal property discovered that it contained a group of alkaloids that through extremely toxic, potential used in cancer treatment. Plant has the ability to synthesize a wide variety of chemical compounds that are used to perform important biological functions and to defend against attack from predators such as insects, fungi and herbivorous mammals. *C. roseus* carbohydrates, flavinoid, saponin and alkaloids. Alkaloids are the most potentially active chemical constituents of *C. roseus*. More than 400 alkaloids are present in the plant, which are used as pharmaceuticals, agrochemicals, flavor and fragrance, ingredients, food additives and pesticides. The alkaloids like actineo plastidemeric, vinblastine, vincristine, vindesine, vindeline, tabersonine etc are mainly present in aerial part whereas ajmalicine, vinceine, vineamine, raubasin, reserpine, catharanthine, etc present in root and basal stem.



Vinblastine



Tabersonine

Rosindin is an anthocynine pigment found in the flower of C. roseus.

DOSE

1. **Morning-**
   30 drops in half cup of water.
2. **Noon-**
   30 drops in half cup of water.
3. **Evening-**
   30 drops in half cup of water

PHARMACOLOGICAL ACTIVTIES

1. ANTI-CANCER ACTIVTY

The anti-cancer alkaloids Vinblastine and vincristine are derived from stem and leaf of *C. roseus*. These alkaloids have growth inhibition effect to some human tumors. Vinblastine is used experimentally for neoplasmas and is recommended for Hodgkin's disease, chorio carcinoma. Vincristine another alkaloid is used for leukemia in children. Different percentage of methanolic crude extr act of Catharanthus was found to show the significant anti-cancer activity against numerous cell types in the in vitro condition and especially greatest activity was found against the multidrug resistant tumor type. Vinblastine is sold as VELBAN and Vincristine as ONCOVIN.

2. ANTI DIABETIC ACTIVITY

The ethanolic extract of the leves and flowers of *C. roseus* showed a dose dependent lowering of blood sugar in coparable to the standard drug. Lowering of blood sugar in comparable to the standard drug glibenclamide. The Hypoglycemic effect has appeared due to the result of increase glucose utilization in the liver. The hypoglycemic activities of alkaloid isolated from *C. roseus* have been studied pharmacologically and a remedy derived from the plant has been marketed under the propritery name VIMCULIN as a treatment for diabetes.

3. ANTIMICROBIAL ACTIVITY

Crude extract from different parts of the plant was tesred for anti- bacterial activity. Extract from leaves showed significantly higher efficacy. The anti-bacterial activity of the leaf extract of the plant was checked against micro organism like Pseudomonas aeruginosa NCIM2036, Salmonella typhimuruim NCIM2501, Staphylococcus aureus

NCIM5021 and was found that the extract could be used as the prophylactic agent in the treatment of many of the disease.

4. ANTI-ULCER PROPERTY

Vincamine and Vindoline alkaloids off the plant showed anti-ulcer property. The alkaloid vincamine, present in the plant leaves shows cerebrovasodilatory and neuroprotective activity. The plant leaves proved for anti-ulcer activity against experimentally induced gastric damage in rats.

RESULT AND DISCUSSION

Medicinal plants were the potent source of various novel pharmaceutical products that showsect causing potent pharmacological effect on the human beings. Instead of using the side effects causing chemical drugs, the ancient medicine could be explored to identity 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 effects could be proved further with the help of the present technology and tools.

In this paper we use spagyric essence of *C. roseus* on 10 dibetic patient and found good results as well as we treat 12 patient of ulcer. All are free from intestinal ulcer.

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