

Phytochemical analysis of *Catharanthus roseus* (L) G. Don

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Abstract: *Catharanthus roseus* (L) G. Don of the Family Apocynaceae is one of the most widely investigated medicinal plants. Singh et.al.2001 he reported that it has been used in traditional medicine as a hypoglycemic agent. The present interest in this plant is due to the fact that it is a source of chemotherapeutic agent with activity against several kinds of cancer. Schmeller and Wind in 1998 reported that it produces a great variety of terpenoid indole alkaloids, most of them with pharmacological activity. It is a perennial, evergreen herb, 30-100cm height that was originally native to the island of Madagascar. The leaves are glossy, dark green, oblong-elliptic, acute, rounded apex, flowers fragrant, white to pinkish purple in terminal or axillary cymose clusters, follicle hairy, many seeded, 2-3cm long, seed black. The plant is commonly grown in gardens for bedding, borders and for mass effect. Further study has to be carried out to determine the bioactive components in the long leaves of *Catharanthus roseus* (L.) In these phytochemical analyses recorded no chemical constituents, which may be responsible for many pharmacological activities. Further work is required to investigate the extract of leaves for various pharmacological activities.

The plant studied here can be seen as a source of useful drug. It also justifies the folklore medicinal uses and claims about the therapeutic values of this plant as a curative agent.

Introduction

Catharanthus roseus (L) which belongs to Apocynaceae family. It is wide morphological variability, lactiferous vessels and their variability compounds originating from its secondary metabolites. The plant is mainly used for a variety of disease-related cancer treatment.

Catharanthus roseus (L) is an important medicinal plant of the Apocynaceae family which contains more than 70 different types of alkaloids. The flower petals, seeds and other parts of *Catharanthus roseus* (L) exhibit antioxidant properties. The different parts of the medicinal plant, *Catharanthus roseus* (L) is used for medicinal purposes for thousands of years in India.

Catharanthus roseus (L) are cultivated to common names, which is named on the basis of their flower colours, Pink: Rosea, White: Alba. Traditionally, leaves of *Catharanthus roseus* (L) are used as medicine for the treatment of following diseases. One of the important types of alkaloids is the vinblastine produced from *Catharanthus roseus* (L) due to its antitumour activity and wide pharmaceutical use. *Catharanthus roseus* (L) to produce modern chemotherapeutic agent for their pain-relieving properties. Apocynaceae is native to the Caribbean, historically used to treat an assortment of diseases.

Experimentally, tried to prove the antibacterial activity of *Catharanthus roseus* (L) against clinical wound isolates. It has an important role in the body defence system that acts as an antioxidant against reactive oxygen species, which are harmful by forming such products through normal cell aerobic respiration. The flower petals, seeds and other parts of *Catharanthus roseus* (L) exhibit antioxidant properties. Thus phenolic compounds have redox properties that act as reducing agents, hydrogen donors, singlet oxygen quenchers or metal chelates. It has multiple applications in foods, cosmetics and pharmaceutical industries. These types of plants' antioxidant mainly applies to prevent lipid peroxidation in the food industries.

Classification

Class – Dicotyledonae

Sub-class - Gamopetalae

Series - Bicarpellatae

Order - Gentianales

Family - Apocynaceae

Genus - *Catharanthus*

Species - *roseus*

Objectives

1. To study the phytochemical present in *Catharanthus*.
2. To determine the major classes of secondary metabolites of plants species *Catharanthus roseus* (L).

Material and Methods

Collection of plant material

Matured leaves of *catharanthus roseus* (L) were collected from the campus of the police head coter, Tal.District Ahmednagar. White and Pink *Catharanthus roseus* (L) collected plant material.

Cleaning and Dry of Plant Material

The Collected plant material under washed under tap water and to remove soil and unwanted dust particles. The leaves were placed in an oven at 45°C for one day remove water and grounded into powder form.

The dried plant material was grind in mixed and sieved it with the help of sieve. This powder kept in air tight polythene bags and used for further extraction.



Preparations of Extract

1. Weight 3 gm. of powdered plant sample and dissolve it in 30 ml of different solvent (aqueous, Methanol, Ethanol) and cover with aluminium foil.
2. Leaves the solution for 24 hours tab room temperature 24- 27°C
3. It filtrate with what man No 1 filter paper and collected the filtrate.
4. This filtrate is further used for the phytochemical screening.



Preparation of Reagents

1. Meyers reagents

Mercuric chloride 1.36 gm and potassium iodide 5.0 gm. and water 100 ml.

2. Ferric Chloride

5 % aqueous Ferric Chloride and 100 ml distilled water.

3. Fehling's A Solution

Take Copper Sulphate Pentahydrate crystals and 7 gm. of CuSo4 and 100 ml H2O Add 2 drops of Sulphuric acid.

4. Fehling B solution

35 gm. Potassium tartrate and add 12 gm. NaOH - sodium hydroxide. Add 100 ml water.

5. 20 % NaOH

20 ml NaOH add 80 ml water.

6. 1 % NaOH

10 gm NaOH add 90 ml water.

7. Mercuric Chloride

Take 27.1 gm. of Powder and 100 ml distilled water.

Qualitative Analysis**1. Test for alkaloids**

To 1 ml extract added 1ml of Mayer's reagent and few drop of iodine solution. Formation of yellow colour precipitate indicate the presence of alkaloids.

2. Test for Terpenoids

To 1 ml crude extract add 1 ml of concentrated H₂SO₄ and heated for 2 min. A greyish colour indicates the presence of terpenoids.

3. Test for Phenol and Tannin

To 1 ml of crude extract added 1 ml of FeCl₃. A blue green or black colour indicates presence of tannin.

4. Test for reducing Sugar

To 1ml of extract added 1 ml of Fehling's B solution. Formation of red colour indicates the presence of sugar.

5. Test for Saponins

To ml of extract Added 2 ml of distilled water, shaken well and formation of 1 cm layer of foam indicates presence of saponins.

6. Test for Flavonoids

Take 1 ml of extract and treat with 3- 5 drops of 20 % NaOH solution observe for the formation of intense yellow colour, which become colourless on Addition of 0.5 ml dilute HCl indicates the presence of flavonoids.

7. Test for Quinines

To 1 ml of extract added 1 ml of 1% NaOH and mixed well. Appearance of blue green or red indicates presence of Quinines.

8. Test for Protein

To 1 ml of extract added few drops of mercuric chloride formation of yellow colour indicates the presence of Protein.

9. Test for Steroids

To 1 ml of extract mixed with 1 ml of Chloroform and concentrated H₂SO₄ side wise. A red colour presence at lower chloroform layer indicates presence of Steroids.

Result**A) Screening of plant secondary metabolites of white *Catharanthus roseus* (L)**

Sr. no	Test	Aqueous	Methanol	Ethanol
1.	Wagner's Test	Positive	Positive	Negative
2.	Salkowski's Test	Positive	Negative	Negative
3.	Feric Chloride	Positive	Positive	Positive
4.	Reducing sugar Test	Negative	Negative	Negative
5.	Foam Test	Positive	Positive	Positive
6.	Alkaline Reagent Test	Negative	Negative	Negative
7.	Quinines Test	Negative	Positive	Positive
8.	Protein Test	Positive	Positive	Positive
9.	Steroides Test	Negative	Negative	Positive

B) Screening of plant secondary metabolites of Pink *Catharanthus roseus*.

Sr.No	Test	Aqueous	Methanol	Ethanol
1.	Wagner's Test	Positive	Positive	Negative
2.	Salkowski's Test	Negative	Negative	Positive
3.	Ferric chloride Test	Positive	Positive	Positive
4.	Reducing Sugar Test	Negative	Negative	Negative
5.	Foam Test	Positive	Negative	Positive
6.	Alkaline reagent Test	Negative	Negative	Negative
7.	Quinine Test	Positive	Negative	Positive
8.	Protein Test	Positive	Positive	Positive
9.	Steroides Test	Negative	Positive	Negative

Conclusion

Further study has to be carried out to determine the bioactive components in the long leaves of *Catharanthus roseus* (L.) In these phytochemical analysis recorded no of chemical constituents, which may be responsible for many pharmacological activities. Further work is required to investigate the extract of leaves for various pharmacological activities.

The plant studied here can be seen as source of useful drug. It also justifies the folklore medicinal uses and claims about the therapeutic values of this plant as curative agent

About phytochemical analysis positive result corroborate their use for therapeutic purposes, since the classes determined by phytochemical screening correlates their biological activities.

This study help to determine important compound which has medicinal activity.

Discussion

In this study the two plants were selected for their phytochemical analysis which are White *Catharanthus roseus* (L), Pink *Catharanthus roseus* (L) Apocynaceae family.

The result of the Phytochemical tests carried out on the various extracted were recorded as they are, Aqueous Methanol, Ethanol. The Secondary preliminary Phytochemical screening revealed the presence of Alkaloid, Saponins, Steroids, Tannins, flavonoids, Protein and Carbohydrates in leaves. Phytochemical constituents in the various part of the very significantly. Medicinal plant is the most exclusive source of life saving drugs for majority of the world's Population. They continue to be an important therapeutic aid for alleviating the ailments of human kinds. India has a rich and diverse flora of flowering medicinal plants. Medicinal plants play a vital role in human health care, about 80% of the world population rely on the use of traditional medicine, concomitantly based on the plant materials. The antimicrobial activity found in this present study may be attributed to various chemical types present study may be attributed to presence of secondary metabolites of various chemical types present in the material either individually. There are the study provides support to the plant's traditional and alternative use against various disease and infections. Results showed that the polar compound like alkaloids, carbohydrates, amino acid and glycosides are present in the polar fractions of extraction from leaves. At present for the prevention for the several diseases, there is an increasing interest for the importance of dietary minerals. They must be supplied by food, since the body cannot synthesize them. So it is necessary to find out, which elements are present in the selected plant.

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