PHYTOCHEMICAL SCREENING OF POLLEN OF *CATHERANTHUSROSEUS* PLANT

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Abstract

The member of Apocynaceae family of Catheranthusroseus plant being used in traditional medicine. To study the phytochemical screening of pollen of the plant Catheranthusroseus have medicinal properties was carried out.Pollen material was successfully extracted with differant organic solvent. The phytochemical screening reveals the presence of alkaloids, steroids, flavinoids, tannins saponins and carbohydrates in them.The result reveals the presence of alkaloids and steroids are reported to have medicinal properties. The presence of these phytochemical can be correlated with the medicinal potential of this plant.

Keywords: Phytochemicals, Pollen, Catheranthusroseus.

Introduction

Medicinal plants play a major role in the medicinal needs of about 70% populations in developing countries,which serve as an important resource for the treatment of various maladies and illnesses (Ngari et al., 2010). Globally, about 85% of the traditional medicines used by different ethnic groups inhabiting various terrains for primary healthcare are derived from plants, especially in India; medicinal plants are widely used by all sections of the population with an estimated 7500 species of plants used by several ethnic communities (Farnsworth, 1988). The plant is being used by the local peoples and tribal of Maharashtra as ethno medicine on various ailments. This plant is also being used for its anti-inflammatory, anti-diarrheal properties by various communities in Indian subcontinent and also across the world. The present study was designed to evaluate the fundamental phytochemical constituents of this wild medicinal plant.It isone of the well-known medicinal plants that have its origin from the continent of Africa. The plant is commonly known as the Madagascar periwinkle or basically *Vincarosea*. It is a tender, perennial plant, which grows as a herb or sub-shrub, growing to approximately 1 metre in height. Leaves simple, petiolate Flowers are commonly white or pink

They are known to have various biological activities such as antimicrobial, antifungal, antioxidant, etc. The important bioactive components in plants are usually the secondary metabolites such as alkaloids, flavonoids, tannins and other phenolic compounds (Edeoga et al., 2005). The Medicinal plants have potent phytochemical components which are important source of antibiotic compounds and are responsible for the therapeutic properties (Jeeva et al., 2011; Jeeva and Johnson, 2012; Florence et al., 2012 & 2014; Joselin et al., 2012 & 2013; Sainkhediya and Ray, 2012; Sumathi and Uthayakumari, 2014). As pollenis very important entity carrying paternal genome to next generation, it is quite likely that different important
constituents may be present in them. Therefore, preliminary phytochemical screening of pollen grains wascarried out in all the plants under investigation

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Table 1: Medicinal uses of the plants in the study

Plant species	Common name in English	Traditional uses
Catheranthusroseus	Rose Periwinkle	Anti diabetic, anti cancer ,leaf decoction use as indigestion, for induce vomiting

Material and Methods:

For phytochemical screening sufficient pollen grains material was collected from *Catheranthusroseus*plants.It was dried, weighed and used for Extraction of constituents.

Extraction of Constituents:

The weighed quantity of pollen material was successfully extracted with different organic solvents. Thesolvents used for successive extraction were petroleum ether (600 to 800C) and alcohol. The solvent wasremoved by Evaporation from the extract and the residue left was weighed from this, the percentage yield tosolvent was calculated. Then it was subjected to various chemical tests as follows.

I - Test for Sterols:

(a) Salkowski reaction: - Few mg of residue of each extract was taken in 2ml of chloroform and 2ml ofsulphuric acid was added from the side of the text tube. The test tube was shaken for few minutes. Thedevelopment of red color in the chloroform layers indicated the presence of sterols.

(b) Liebermann-Burchard Reaction: - Few mg of residue wad dissolved in chloroform and few drops ofacetic unhydride were added followed by conc. sulphuric acid from the side of the test tube. A transient colourdevelopment from red to blue and finally green indicated the presence of sterols.

II- Test of Alkaloids:

Few mg of residue of each extract was taken separately in 5ml of 1.5% v/v hydrochloric acid and filtered.These filtrates were then used for testing alkaloids.

a) Mayer's Reagent test: - To a little of the test filtrate taken in a watch glass a few drops of Mayer'sreagent was added. Formation of cream coloured ppt. showed the presence of alkaloids.

b) Wagner's Reagent: - few ml of test filtrate was taken in test tube and to this Wagner's reagent wasadded", a brown flocculent precipitate was formed indicating the presence of alkaloids.

III Test of Proteins:

a. Bureit test: - A few ml of test residue was taken in water and 1 ml of 4% sodium hydroxide solutionwas added followed by a 1% solution of copper sulphate. Violet Pink colour development indicates the presenceof protein.

b. Xanthoprotein test: - Few 2 ml of extract was taken to this was added 5ml of Nitric acid, whiteprecipitate indicates the presence of protein.

IV Test for Saponins:

a. Foam Test: - A few mg of test residue was taken in a test tube and shaken vigorously with a smallamount of sodium bicarbonate and water. If stable, characteristic honey comb like froth is obtained, saponins arepresent.

V Test for Caumarins:

A small amount of test residue moistened with water was taken in test tube. The month of test tube wascovered with paper mounted with dilute sodium hydroxide solution. The covered test tube was placed in boilingwater bath for several minutes. The paper was removed and exposed to ultraviolet light. If yellowish greenfluorescence is obtained, the caumarins are present.

VI Test for Tanins:

The test residue of each extract was taken separately in water, warmed and filtered.

Tests are carried out with the filtrate using following reagents.

a) Ferric chloride solution: - Few drops of ferric chloride were added to a little of the above test filtrate. Ifgreenish or bluish black colour is obtained, Tanins are present.

b) Lead acetate Test: - Few drops of lead acetate solution were added to the test filtrate. If precipitate isobtained, tannins are present.

VII Test for Flavinoids:

a) Shinoda Test: - A small quantity of test residue was dissolved in 5ml of ethanol (95%) and added smallpiece of magnesium ribbon followed by few drops of concentrated hydrochloric acid, colours ranging fromorange to red (flavones), red to crimson (flavorals) crimson to magenta (flavonones) and occasionally to greenor blue are developed within 3 minutes if flavinoids are present.

VIII Test for sugars:

Fehlings Solution Test: - The test residue solution was heated and drop by drop Fehling solution was addedto it and warmed. If red precipitate of cuprous oxide is obtained, reducing sugars including all monosaccharidesand many disaccharides are present

Sr. No.	Test	Petroleum Ether
1	Sterols: a)Salkowaski reaction	+
	b) Liebermann-Burchard reaction	+
2	Alkaloids : a) Mayer's reagent	+
	b)Wagner's reagent	+
3	Proteins: a)Bureit test	-
4	Saponins: a)Foam test	-
5	Caumarins	-
6	Tannins: a) Feric Chloride reagent	-
	b) Leads acetate reagent	
7	Flavinoides: a)Shinodha test	-
8	Carbohydrates: a) Fehling's Test	-

RESULT AND DISCUSSION

Catheranthusroseus pollen were collected, the pollen dried under shaded condition at room temperature**.** Pollen of *Catheranthusroseus* showed the presence of Steroids and Alkaloids which are reported to have medicinal properties.The earliest chemical h investigation of *Catheranthusroseus*was carried out the presence of alkaloidal constituents in them. More than 100 alkaloids have been isolated from the plant and their biological uses have been widely explored. (Trease and Evans, 1978). These alkaloids possessantifibrillic, hypotensive, sedative and tranquillzing properties. The results confirm the presence of constituents which are known to exhibit medicinal as well as physiological activities (Mukeshwar et al 2011).. The presence of some of these compounds has also been confirmed to have antimicrobial activity. Hence it could be inferred that the plant extracts could be a source for the industrial manufacture of drugs useful in the chemotherapy of some microbial infection

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