

Research

Preliminary Phytochemical Screening of *Catharanthus Roseus* (L.) G. Don

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Citation:

Singh, S., & Jaiswal, P. K. (2024). Preliminary phytochemical screening of *catharanthus roseus* (L.) G. Don. *Biophilia Insights*, 2 (1), e202421004.
<https://doi.org/10.52679/bi.e202421004>

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Abstract

Catharanthus roseus is a well-known ayurvedic herb. The therapeutic effect of plant materials in a variety of diseases has prompted their continuous investigation and use. This led us to investigate the preliminary phytochemical components of *Catharanthus roseus* plant extracts. The techniques were used to conduct phytochemical screening of ethanolic and aqueous extracts of the *C.roseus* leaves.

Received: 20 May 2024
Accepted: 22 June 2024
Published: 30 June 2024

Keywords: Ethanolic extract, Aqueous extract, Phytochemical screening, Hypo glycemc action, Leaf extract, Alkaloids, Lymphosarcoma, Choriocarcinoma

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Introduction

Catharanthus roseus (L.) G. Don (previously *Vinca rosea* L., Apocynaceae) is generally known as the Madagascar periwinkle. It is a perennial evergreen herb that grows to be 30-100 cm tall. It was originally endemic to Madagascar but is now widely distributed across the tropics (Mir et al., 2018). The relevance of the concerned plant leaves is mostly from their ability to manufacture a variety of terpenoids and alkaloids with therapeutic effects. The chemicals indicated above have a wide variety of uses, primarily in the treatment of lymphocytic cancer, Wilkins' cancer, neuroblastoma, reticulum cell tumour, Hodgkin's disease, lymphosarcoma, and choriocarcinoma (Aslam et al., 2010). Alkaloids have been found and isolated to a greater degree than other natural chemicals in *C. roseus* (Kumari and Gupta, 2013; Tikhomiroff and Jolicoeur, 2002). *Catharanthus roseus*, which is a powerful therapeutic herb many of pharmacological actions such as antimicrobial, antioxidant, anthelmintic, antifeedant, anti sterility, antidiarrheal, antidiabetic effect, etc (Wang et al., 2012; Asma et al., 2016).

Catharanthus roseus (L.), an important medicinal plant belonging to the Apocynaceae family used to treat many deadly diseases, contains a realistic abundance of useful alkaloids used in diabetes, hypertension, asthma, constipation and cancer, and a menstrual problem. The plant has spread all over tropical and subtropical parts of India and grows wild all over the plains and lower foothills in the Northern and Southern hills of India. In Malaysia, it is locally called as Kemunting Cina. The periwinkle logo as a symbol of hope for cancer patients is used by the National Cancer Council of Malaysia (Loh, 2008).

The ethanolic extracts of the leaves and flower of *C. roseus* revealed that a dose-dependent decreasing of blood sugar is similar to the standard drug. Decreasing of blood sugar reported in *Catharanthus roseus* (Paarakh et al., 2019). The Hypo glycemc action has been aroused due to the result of the increased glucose utilization in the liver (Chattopadhyay et al., 1991; Singh et al., 2001).

Material and methods

Collection of plant materials

Fresh *C.roseus* leaves were taken from the garden. The plant parts were properly rinsed with tap water, followed by sterilized distilled water. The plant parts were dried in the shade at room temperature before being utilized as raw materials to extract preliminary phytochemical studies of the plant.

Qualitative analysis of phytochemical

Test for alkaloids

To 1ml of leaf extract added in 1ml of Meyers' reagent and a few drops of iodine solution. The formation of yellow colour precipitate indicates the presence of alkaloids.

Test for flavonoids

The filtrate was shaken with 1 mL of 1% ammonium chloride solution, where light yellow colour was observed. It indicated the presence of flavonoids.

Test for glycoside:

0.5g of extract was diluted to 5 ml in water was added 2 ml of glacial acetic acid containing one drop of FeCl₃. This was underlaid with 1 ml of conc. Sulphuric acid. A brown ring at the interface. A violet ring has appeared below the brown ring. A greenish ring may form just above the brown ring.

Test for terpenoids:

1ml of concentrated sulphuric acid added to 1ml crude extracted and heated for 2 minutes, and greyish colour would show the presence of terpenoids.

Test for carbohydrate:

One ml of plant extract was taken in a test tube and added 1ml of Barfoed's reagent and heat on water bath for 1 minute. The formation of Brown coloured precipitate showed the presence of carbohydrates.

Test for steroids

2 mL of acetic anhydride and 2 mL of H₂SO₄ were added to the extracts. The colour changed from violet to blue or green, which indicated the presence of steroids.

Test for saponins

A small quantity of different extracts was diluted with 4 mL of distilled water. The mixture was shaken vigorously and then observed appearance of a foamy layer, which indicated the positive.

Test for tannin:

2ml of crude extract sample in a test tube and add 3% of ferric acid chloride drop. The appearance of bluish-black precipitate indicated the presence of tannin.

Test for fatty acid

The sample to be tested is rubbed between the folds of filter paper. The appearance of a translucent spot confirms the presence of fats in the given sample.

Test for gums

Each extract was dissolved in 10 mL of distilled water and 25 mL of absolute alcohol was added to it with constant stirring. White or cloudy precipitate indicated the presence of gums.

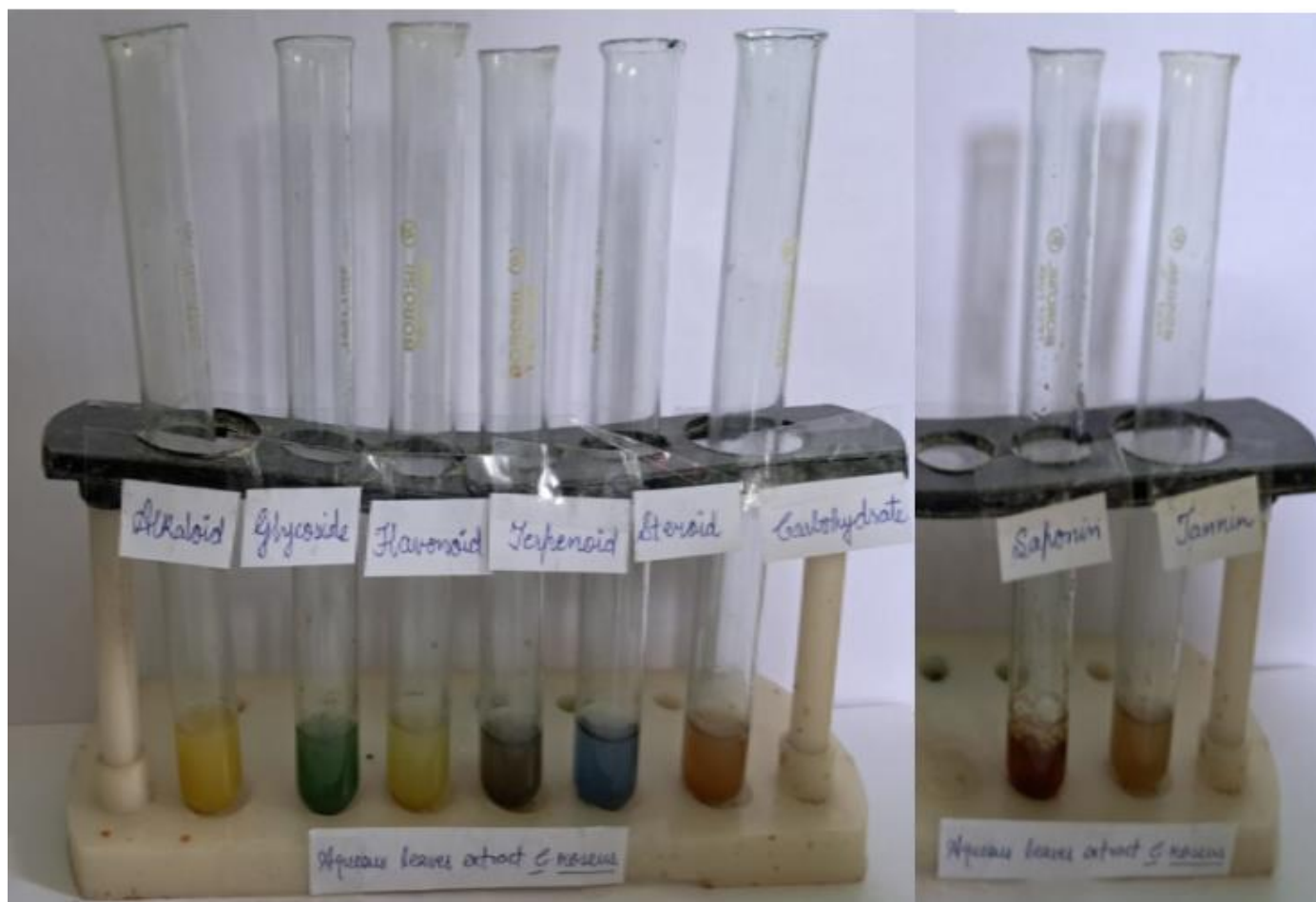
Table 1: Preliminary phytochemical screening of *C. Roseus* leaves

Test	Ethanol	Distilled water
Alkaloids	+	+
Glycoside	-	+
Flavonoid	+	+
Terpenoids	+	+
Carbohydrate	+	+/-
Steroid	+	+
Saponin	-	+
Tannin	-	-
Fatty acid	+	+
Gum	-	-

(+symbol indicates presence and – indicates absence with respect to extract solvents).

Result and discussion

The investigation showed that *Catharanthus roseus* contains alkaloids, flavonoids, terpenoids, steroid, carbohydrates and fatty acids were present in ethanol and aqueous extract (Table 1). Glycoside is present in only aqueous extract. Tannin was absent in both extracts, similar results also reported by some authors.



Conclusion

The plant includes massive phytochemical compounds of diverse therapeutic uses, which may work directly or in conjunction with other metabolites to conquer a particular condition. Vinca has made a significant contribution to modern medicine. Numerous research has proven some of its medical applications, but more of its hidden qualities have to be discovered. As a result, the majority of research might be conducted on the aforementioned plant to uncover undiscovered secrets that would aid the current pharmaceutical industry.

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