

Comparative study of preliminary phytochemical extracts of *Catharanthus roseus* Leaves.

¹Prakash Solanki, ²Sandeep kumar Gohar, ³Ashok Barua ⁴Mahesh Baviskar .

Assistant Professor

^{1,2,3}Govt. Holkar Science College Indore M.P. (India) 452001

⁴Govt. PG College, Sendhwa Barwani MP (India) 451666.

¹Department of chemistry

¹Govt. Holkar Science College Indore M.P. (India) 452001

Abstract: Herbal medicinal plants are used for treatment of existing and new diseases in almost all the countries of the world. *Catharanthus roseus* it is useful medicinal plant of apocynaceae family. But availability of this plant and its properties also play a important role. *Catharanthus roseus* is a medicinal herb which is easily available and its properties are beneficial to humans. It is used in treatment of several diseases like diabetes, cancer, high blood pressure, asthma, inflammation, dysentery, brain imbalance, angiogenesis, malaria and other diseases that occur due to causative micro organisms. The objective of this work is to study the phytochemical analysis of Methanolic and Ethanolic extract of *Catharanthus roseus* leaves against the wound isolates. Two different solvents methanol and ethanol were used to extract the bioactive compounds. Phytochemical screening reveals the presence of Flavonoids, Tannins, Alkaloids and Terpenoids. Phytochemical investigations explore active constituents which are very significant in drug development.

Keywords: *Catharanthus roseus*, Flavonoids, Tannins and Phytochemical analysis.

Introduction

Medicinal plants besides therapeutic agents are also a big source of information for a wide variety of chemical constituents which could be developed as drugs with precise selectivity. These are the reservoirs of potentially useful chemical compounds which could serve as newer leads and clues for modern drug design [1]. Most herbal plant used in traditional medicine consist of large number of bioactive compounds. These can be used as alternative therapeutic tools for the prevention or treatment of many contagious diseases. Medicinal plants are considered as clinically effective and safer alternatives to the synthetic antibiotic [2]. The extracts of *Catharanthus roseus* have demonstrated significant anticancer activity against numerous cell types [3]. *Catharanthus roseus* is an evergreen subherb or herbaceous plant growing to 1 m tall. The leaves are oval to oblong, 2.5- 9.0 cm. long and 1- 3.5 cm. broad glossy green hairless with a pale midrib and a short petiole about 1- 1.8 cm. long and they are arranged in the opposite pairs. The flowers are white to dark pink with a dark red centre, with a basal tube about 2.5- 3 cm. long and a corolla about 2-5 cm. diameter with five petal like lobes. The fruit is a pair of follicles about 2-4 cm. long and 3 mm broad [4]. *Catharanthus roseus* contains significant amounts of volatile compounds including caffeoylquinic acids and flavonal glycosides which are known to possess antioxidant activity. It has a important role in the body defense system by acting as a antioxidants against reactive oxygen species (ROS) [5]. Most reports on anti-diabetic activity of this plant have been conducted using crude extracts [6-9] rather than the pure bioactive compounds. Chattopadhyay and Singh et al. showed that the extract of this plant exhibited hypoglycemic activity in a streptozotocin induced diabetic rat model [10, 11].

Materials and Methods

Plant Material *Catharanthus roseus* was collected at flowering stage from niharpur mundi district Indore in month of September-2017 following collection the leaves were picked and it was air dried under shade at atmospheric temperature and grounded.



Fig1. : *Catharanthus roseus* Plant.

The phytochemical constituents extracted from the leaves were extracted using Methanol, Ethanol, Acetone and Hexane as a Solvent in the system. The leaves extraction process was carried out at room temperature for 4-5 days using Soxhlet extraction method.

Table 1. showing presence and absence of constituents

Phytochemicals	Test done for identification	Methanolic extracts	Ethanolic extracts	acetone Extract	Hexane Extract
Flavonoids	Lead acetate	+	+	+	+
Alkaloids	Mayers	+	+	+	—
Tannins	Ferric Chloride	+	+	+	+
Amino acids	Ninhydrin	—	+	+	—
Terpenoids	Salkowski	—	+	+	+
Saponins	Froth	+	+	+	+
Proteins	Biuret	—	—	—	—
carbohydrates	Fehlings	—	—	—	—
Glycosides	Keller Killiani	+	+	+	+

Where + and – indicates the presence and absence of phytochemical constituents.

4. Result and Discussion

Catharantus roseus plants have been used as medicine by since very long period of time. About 70-80% of the world population uses traditional medicine based on plant materials. The Result of diffrent extract of Catharantus roseus leaves shows that Phytochemical constituents like Flavonoids, Alkaloids, Tannins, Saponins and glycosides in Methanolic extract, Phytochemical constituents like Flavonoids, Alkaloids, Tannins, Amino acids, Terpenoids Saponins and glycosides in Ethanolic and Acetone extracts , Phytochemical constituents like Flavonoids, Tannins, Terpenoids, Saponins and glycosides in Hexane extracts were found to present.

Conclusion

The selected plant leaves are the source of the phytochemicals which plays a vital role in preventing various diseases. Therefore, further work can be carried out for the isolation and molecular characterization of active constituents responsible for antibacterial and antidiabetic activity and can also be studied for its activity against wide spectrum of microbes to develop it into a useful therapeutics.

Reference

- [1] R. Vijyalakshmi, R. Ravindran Preliminary comparative phytochemical screening of root extracts of *Diospyrus ferrea* (Wild.) Bakh and *Arva lanata* (L.) Juss. Ex Schultes. *Asian J Plant Sci Res.* 2, 581-587 (2012).
- [2] G. Chinnavenkataraman and S. Rajendran In vitro antibacterial activity and phytochemical analysis of *Catharantus roseus* (Linn.) G. Don. *Asian Pacific Journal of Ttopical Biomedicine.* 3, 155-158 (2012).
- [3] A. El-Sayed and G.A. Cordell Catharanthamine, a new antitumor bisindole alkaloid from *Catharantus roseus*. *J. Nat. Prod.* 44(3), 289-293 (1981).
- [4] R. Halberstein Medicinal Plants: historical and cross-cultural usage patterns. *Ann. Epidemiol.* 15, 686-699 (2005).
- [5] K. Kabesh, P. Senthilkumar, R. Ragunathan and R. Raj Kumar "Phytochemical analysis of *Catharantus roseus* Plant Extract and its Antimicrobial Activity," *Int. J. Pure App. Biosci.* 3(2), 162-172 (2015).
- [6] S. Nammi, M.K. Boini, S.D. Lodagala and R.B. Behara The juice of fresh leaves of *Catharantus roseus* Linn. reduces blood glucose in normal and alloxan diabetic rabbits. *BMC Complement. Altern. Med.* 3, 2 (2003).
- [7] S.C. Ohadoma and H.U. Michael Effects of co-administration of methanol leaf extract of *Catharantus roseus* on the hypoglycemic activity of metformin and glibenclamide in rats. *Asian Pac. J. Trop. Med.* 4, 475–477 (2011).
- [8] R.N. Gacche and N.A. Dhole Profile of aldose reductase inhibition, anti-cataract and free radical scavenging activity of selected medicinal plants: An attempt to standardize the botanicals for amelioration of diabetes complications. *Food Chem. Toxicol.* 49, 1806–1813 (2011).
- [9] R.M. Ganga, S. Satyanarayana and K.K. Eswar Safety of Gliclazide with the aqueous extract of *Vinca rosea* on pharmacodynamic activity in normal and alloxan induced diabetic rats. *J. Pharm. Res.* 5, 1555–1558 (2012).
- [10] R.R. Chattopadhyay A comparative evaluation of some blood sugar lowering agents of plant origin. *J. Ethnopharmacol.* 67, 367–372 (1999).
- [11] S.F. Singh, P.Vats, S. Suri, R. Shyam, M.M. Kumria, S. Ranganathan and K. Sridharan Effect of an antidiabetic extract of *Catharantus roseus* on enzymic activities in streptozotocin induced diabetic rats. *J. Ethnopharmacol.* 76, 269–277 (2001).