Comparative study of preliminary phytochemical extracts of Catharanthus roseus Leaves.

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Abstract: Herbal medicinal plants are used for treatment of existing and new diseases in almost all the countries of the world. Catharanthus roseus is a useful medicinal plant of apocynaceae family. But availability of this plant and its properties also play an 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 microorganisms. 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 caffeoquinic acids and flavonal glycosides which are known to possess antioxidant activity. It has an 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 nihalpur 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

<table>
<thead>
<tr>
<th>Phytochemicals</th>
<th>Test done for identification</th>
<th>Methanolic extracts</th>
<th>Ethanolic extracts</th>
<th>acetone Extract</th>
<th>Hexane Extract</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flavonoids</td>
<td>Lead acetate</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Alkaloids</td>
<td>Mayers</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>_</td>
</tr>
<tr>
<td>Tannins</td>
<td>Ferric Chloride</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Amino acids</td>
<td>Ninyhydrin</td>
<td>_</td>
<td>+</td>
<td>+</td>
<td>_</td>
</tr>
<tr>
<td>Terpenoids</td>
<td>Salkowski</td>
<td>_</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Saponins</td>
<td>Froth</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Proteins</td>
<td>Biuret</td>
<td>_</td>
<td>_</td>
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<td>_</td>
</tr>
<tr>
<td>Carbohydrates</td>
<td>Fehlings</td>
<td>_</td>
<td>_</td>
<td>_</td>
<td>_</td>
</tr>
<tr>
<td>Glycosides</td>
<td>Keller Killiani</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
</tbody>
</table>

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

4. Result and Discussion

Catharanthus 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 different extract of Catharanthus 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