Preliminary Phytochemical Analysis of methanolic leaves extract of Solanum pubescens Willd.

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Abstract: The present study was aimed to investigate the preliminary phytochemical screening of the leaves of Solanum pubescens is a shrub in solanaceae family. It’s mainly found in Peninsular India and Sri Lanka. The plants are tribal’s for the treatment of several diseases Brain disorders, liver disorders, diarrhoeal diseases and cancer disorders injury with classical signs of warmth, reddening pain, swelling and loss of function. The present study was carried out to investigate the Phytochemical analysis shows the presence of alkaloid, glycoside, Saponins, Phenolic compounds Tannins, flavonoids, and shows the absent protein and amino acid.

Key Words: Phytochemical constituents, Solanum pubescens and Alkaloid.

1. Introduction

Solanum pubescens are well known as Usti in Telugu and Kattusundai in Tamil (India). Previously reported compounds from the plant were flavonol-3-o-methyl esters (Krishna Kumari, et al, 1985). The use of herbal preparations in the management of various forms of epilepsies is very common in many parts of the world. Epilepsy affects more than 50 million persons worldwide (White, 1999). The plants are tribal’s for the treatment of Brain disorders, liver disorders, diarrhoeal diseases and cancer disorders injury with classical signs of warmth, reddening pain, swelling and loss of function. A medicinal plant is factually any plant which in one or more of its parts contains substances that can be used for therapeutic purposes or which have precursors for the synthesis of direct therapeutic agents. The Use of medicinal plant is increasing in many countries where 35% of drugs contain natural products (Sofowora, 1982). Plants synthesize a vast array of secondary metabolites that are important for human life. For therapeutic purpose, phytochemical investigation of plants is an interesting area of research, leading to the isolation of several new compounds. Therefore, in recent years research is more oriented towards folk medicine, searching for new leads for the development of better drugs against infectious diseases (Benkeblia, 2004) and other common ailments. It is the protective attempt by the organism to remove the injurious stimuli as well as initiate healing process for the tissues and considered to be the major cause of rheumatoid arthritis. Drugs currently used for management of pain and inflammatory conditions present toxic side effects on chronic administration. Therefore, attempts are being taken to study promising plants which may lead to develop newer or safer drugs (Fayaz, 1994). Solanum pubescens is a traditional medicine plant for the treatment of headache, menstrual pain, rheumatoid arthritis, tuberculosis, ulcers, etc (Sumalatha, et al., 2013) and it has been used in the treatment of whooping cough and of certain other diseases (Reddy, et al., 2006) Furthermore, it has been used in the treatment of hypoglycaemia and topical application for skin infections. Similarly, in scientific literature there are very few reports on evaluated pharmacological properties like Antidiabetic (Hemamalini, et al., 2012) hepatoprotective (Hemamalini, et al., 2012) gastroprotective (Hemamalini, et al., 2011) anti-inflammatory (Niyogi, et al., 2012) Anti-anxiety, Anti-depressants, My orelaxant and Antidiarrheal (Deepika, et al., 2013). It has not been extensively used in the traditional medicine may be for its bitterness which may acts as cytotoxic agent. Thus for, Solanum pubescens has not been explored for a through quantitative and qualitative phytochemical analysis. There are no reports on its complete phytochemical contents except a few indicating the existence of flavonoids and alkaloids in leaf extract (Anurag Bhargav, et al., 2012), (Krishna Kumari, et al., 1985), (Krishna Kumari, et al., 1986) and (Krishna Kumari, et al., 1985). Hence, it is imperative take up thorough phytochemical studies.

2. Materials and Methods

2.1 Morphological characters

Unarmed pubescent shrubs. Leaves to 12 x 7 cm, ovate-elliptic to deltoid, apex acute, base unequally truncate, membranous, margins entire to wavy; petiole to 8 cm, pubescent. Racemes axillary; peduncle to 5 cm, pubescent; pedicels 2 cm, pubescent; flowers blue; calyx lobes 6 mm, lanceolate, pubescent; corolla tube 5 mm, lobes 6
mm, lanceolate, pubescent; ovary 1.5 mm, style 1 cm, stigma capitate.

2.2 Collection of Plant material and extraction

*Solanum pubescens* were collected from Western Ghats, Sirumalai, Dindugal district, Tamilnadu. The healthy plant leaves were collected and washed thoroughly in distilled water. The leaves allowed drying in shade place for one week. Well dried leaf samples were powdered by soaking 100gm of dried powder in 200ml of methanol for 12 hours. The extracts were filtered using Whatman filter paper No. 42.

2.3 Preliminary phytochemical screening

The phytochemical includes alkaloids, Carbohydrates, saponins, phenolic compounds, tannins, flavonoids, phytosterols, fixed oils and fats.

2.4 Qualitative screening test:

Alkaloids (H. Wagner’s test 1993):

0.5 g of powder was stirred with few ml of diluted HCl and filtrated. To this, 2 ml of Hager’s reagent was added. A prominent yellow precipitated indicated the presence of Alkaloids.

Glycosides (Borntrager test):

A few amount of extract was hydrolyzed with Con. HCl for 2 hours in boiling water bath and filtrated. Drop of filtrate was treated with chloroform and shaken well. The chloroform layer was separated and 10% ammonia solution was added to it. Pink color is presence of glycosides.

Saponins (Frothing test):

The plant extract (0.5g) was dissolved with distilled water made up to 20ml. The suspension was shaken in a graduated cylinder for 15 min. A 2cm layer of foam indicated the presence of saponins.

Phenolic (Ferric chloride test):

A few drops of filtrate and a drop of neutral 5% ferric chloride solution were added. A dark green colour was indicated the presence of phenolic.

2.5 Results and Discussion

The Phytochemical analysis of methanol extract from leaves explant. The medicinal plant are tribal’s for the treatment of Brain disorders, liver disorders, diarrhoeal diseases and cancer disorders Injury with classical signs of warmth, reddening pain, swelling and loss of function. The present investigation, quantitative phytochemical screening test were analysed in leaves extract. The result are shown in table -1 which indicated the presents or absences in compounds of *Solanum pubescens* the results showed was present in high intensity followed by Alkaloids, Saponins, Phenolic compounds, Tannins, Flavonoids, phytosterols, fixed oils and fats. These compounds also can be correlated with the medicinal potential of the plant. Other group of Proteins and amino acid were not present in the leaves plant extract. Reported the phenolic compound are present in most widely distributed in the plant kingdom. Mainly, the phenolic and flavonoids compounds extracted from the leaves samples antibiotics activity of the plant leaf extracts (Hossain *et al*., 2013). Secondary metabolites are considered products of primary metabolism but not involved in metabolic activity (alkaloids, phenolics, essential oils and terpenes, sterols, flavonoids, lignins, tannins, etc.) (Pal, 2007). (Subhadra Devi, 2012). Further, the phenyl propanoidal derivatives such as phenol, flavone, flavonoids, lignin and ligan etc. have been experimental proved in many pharmacological studies that act as antimicrobial agents in wide spectrum of bacterial and fungal strains (Nitiema *et al*., 2012; Alves *et al*., 2014). These compounds also have been reported as a good source of...
antioxidant agents (Gengaihi et al., 2014). The presence of tannin in plant to protected from animal does not graze (Ulhe and Narkhede, 2013). Standardization of herbal drugs is a matter of great concern. Standardization is very much essential for assessment of purity and identification of any sample. The preliminary Phytochemical analysis of Solanum pubescens reveals the presence of Alkaloids, Saponins, Phenolic compounds, Tannins, Flavonoids, phytosterols, fixed oils and fats which could attribute to the medicinal efficacy. Heavy metal and inorganic elements are present within the permissible limits. Furthermore studies are required to isolate and characterize the active principles of Solanum pubescens.

Table No: 1 Preliminary Phytochemical screening of Solanum pubescens Leaves Explant

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Chemical constituent</th>
<th>Methanol extract from leaf explants</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Alkaloids</td>
<td>+++</td>
</tr>
<tr>
<td>2</td>
<td>Glycosides</td>
<td>++</td>
</tr>
<tr>
<td>3</td>
<td>Saponins</td>
<td>+</td>
</tr>
<tr>
<td>4</td>
<td>Phenolic compounds</td>
<td>++</td>
</tr>
<tr>
<td>5</td>
<td>Tannins</td>
<td>+</td>
</tr>
<tr>
<td>6</td>
<td>Flavonoids</td>
<td>++</td>
</tr>
<tr>
<td>7</td>
<td>Proteins and amino acid</td>
<td>-</td>
</tr>
</tbody>
</table>

*The given results are statistically significant*

Graph: 1 Methanol extract from leaves explant Solanum pubescens Willd.

4. Conclusion

We concluded that the extract of Solanum pubescens, the preliminary Phytochemical studies have clearly demonstrated that the plant of Solanum pubescens has a rich source of essential oils, alkaloids, flavonoids, saponins, steroids, tannins and coumarins. The extract of methanol is found to have more phytoconstituents. It is presumed that the presence of these constituents together could be attributed to the presence of curative abilities. The exploitation of involves these pharmacological properties further investigation of these action ingredients by implementation of these techniques like anti-epileptic activity.

Acknowledgement

The authors would like to acknowledge the support received from PG & Research Department of Botany National College (Autonomous), Tiruchirappalli, Tamilnadu, India for providing the necessary infrastructure.

References

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