Preliminary Phytochemical Screening of Various Extracts of Leaves and Tubers of *Sauromatum guttatum* (Wall.) Schott.

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Abstract

Preliminary phytochemical screening is a valuable step in the detection of the bioactive principles present in medicinal plants and subsequently may lead to drug discovery and development. It is expected that the important phytochemical properties recognized by this study will be very useful in the curing of various diseases. In this study, we have taken plant Sauromatum guttatum from Araceae family. The main objective of the research work was to carryout preliminary phytochemical test for the above plant.

Keywords: *Preliminary, Bioactive, SAuromatum guttatum*

1. INTRODUCTION

About 80% of the total population depends on traditional drugs for primary care of health, a large portion of which include the utilization of plant extracts. In India approximately 95% of the remedies were utilized in Unani, Ayurveda, Homeopathy and Siddha.[1] Phytochemicals are responsible for therapeutic action of plants[2]. These are non-nutritive synthetic concoctions that have shielded human from different maladies. The major active constituent comprises of alkaloids, flavonoids, saponins, phenolic mixes, phytosterols, proteins and amino acids, gums and adhesive and lignin.[3] Phytochemical constituents are the fundamental hotspot for establishment of several pharmaceutical industries. The constituents are assuming a huge job in the distinguishing proof of rough medications. The therapeutic estimation of these plants lies in some concoction substances that deliver an unequivocal physiological activity on the human body. The most important property of these bioactive constituents of plants is they are more effective with little or no side effects when compared to the commonly used synthetic chemotherapeutic agents.

Sauromatum guttatum Schott (Synonyms: Sauromatum venosum Kunth, Arum venosum Aiton, Typhonium venosum) is a plant having a place with family Araceae or the Aroid family. It is related to the well-known Amorphophallus class of plants. It is a tuberous perennial from the forests of the Himalayas and in E. furthermore, W. Africa.[4] It is local to India and Pakistan. An increasingly minimized type of this plant can be found in Maharashtra, the Himalayan forms will in general be taller and more lush.[5, 6]

2. MATERIALS AND METHODS

2.1. Selection, collection and authentication of Plant

The plant parts were collected from the various local sites of Rewa and Jabalpur areas of M.P. and identified & authenticated by Dr. S. N. Dwivedi, Prof. and Head, Department of Botany, Janata PG College, A.P. S. University, Rewa, M.P. and was certified under Voucher specimen No. PCog/SG/16.

2.2. Successive Extraction of Plant Material

Sample were shattered and screened with 40 mesh. The shade dried coarsely powdered tubers and leaves of *Sauromatum guttatum* (Wall.) Schott (250gms) were loaded in Soxhlet apparatus and was extracted with petroleum ether (60-62°C), Chloroform, ethanol and water until the extraction was completed. After completion of extraction, the solvent was removed by distillation. The extracts were dried using rotator evaporator. The residue was then stored in dessicator for further activities.[7]

2.3. Preliminary Phytochemical Screening of Extract

The various extract obtained after extraction were subjected for phytochemical screening to determine the presence of various phytochemical present in the extracts. The standard procedure were adopted to perform the study.

2.3.1. Tests for carbohydrates

(A) Molisch's test

To the Sample 2-3 drops of 1% alcoholic - napthol solution and 2 ml of conc. sulphuric acid was added along the sides of the test tube. Appearance of purple to violet ring at the junction of two liquids shows the presence of carbohydrates.

(B) Fehling test

To the sample add fehling reagent, appearance of brick red precipitate shows presence of carbohydrates.

2.3.2. Test for glycosides

(A) Legal's test

To the sample add 1 ml of pyridine and few drops of sodium nitropruside solutions and then it was made alkaline with sodium hydroxide solution. Appearance of pink to red colour shows the presence of glycosides.

(B) Borntrager's test

Sample was treated with chloroform and then the chloroform layer was separated. To this equal quantity of dilute ammonia solution was added. Ammonia layer acquires pink color, showing the presence of glycosides.

(C) Baljet's test

To the sample add picric acid, orange color shows presence of glycosides.

2.3.3. Test for alkaloids

A small portion of the sample was stirred separately with few drops of dilute hydrochloric acid and was tested with various reagents for the presence of alkaloids. The reagents are

- Dragendroff's reagent : Reddish brown precipitates
- Wagner's reagent : Reddish brown precipitates
- Mayer's reagent : Cream color precipitates
- Hager's reagent : Yellow color precipitates

2.3.4. Test for proteins and free amino acids

Small quantities of the sample was dissolved in few ml of water and treated with following reagents.

(A) **Million's reagent:** Appearance of red color shows the Presence of protein and free amino acid.

(B) **Ninhydrin reagent:** Appearance of purple color shows the Presence of Proteins and free amino acids

(C) **Biuret's test:** Equal volumes of 5% sodium hydroxide solution & 1% copper sulphate solution was added. Appearance of pink or purple color shows the presence of proteins and amino acids.

2.3.5. Test for tannins and phenolic compounds

A small quantity of the sample was taken separately in water and test for the presence of phenol compounds and tannins was carried out with the following reagents.

- Dilute Ferric chloride solution (5%) : Blue color or green color
- 10% lead acetate solution : White precipitates

2.3.6. Test for flavonoids

(A) Alkaline reagent test

To the test solution add few drops of magnesium hydroxide solution, intense yellow colour is formed which turns to colourless on addition of few drops of dilute acid indicates presence of flavonoids.

(B) Shinoda's test

Small quantities of the sample was dissolved in alcohol, to them piece of magnesium followed by conc. hydrochloric acid drop wise added and heated. Appearance of pink, crimson red, green to blue color shows the presence of flavonoids**.**

2.3.7. Tests for fixed oils and fats

(A) Spot test

A small quantity of sample was separately pressed between two filter papers. Appearance of oil stain on the paper indicates the presence of fixed oil.

(B) Saponification test

Few drops of 0.5 N alcoholic potassium hydroxide were added to a small quantity of sample along with a drop of phenolpthlein, the mixture was heated on a water bath for 1-2 hours, formation of soap or partial neutralization of alkali indicates the presence of fixed oils and fats.

2.3.8. Tests for steroids and triterpenoids

(A) Libermann-burchard test

Treat the sample with few drops of acetic anhydride, boil and cool. Then add con. sulphuric acid from the side of test tube, brown ring is formed at the junction two layers and upper layer turns green which shows presence of steroids and formation of deep red colour indicates presence of triterpenoid.

(B) Salkowski test

Treat the sample with few drop of conc. sulphuric acid, red colour at lower layer indicates presence of steroids and formation of yellow coloured lower layer indicates presence of triterpenoids.

2.3.9. Test for mucilage and gums

- Small quantities of sample was added separately to 25 ml of absolute alcohol with constant stirring and filtered. The precipitates was dried in oil and examined for its swelling property for the presence of gum and mucilage.
- To the sample add ruthenium red solution, pink color shows presence of mucilage.

2.3.10. Test for waxes

To the test solution add alcoholic alkali solution, waxes get saponified.[7-10]

3. RESULTS AND DISCUSSIONS

The extract obtained after extraction of plant material were subject to phytochemical screening which revealed the present of various active phytoconstituents. The results were presented in Table No. 1 & 2

Table No. 1. : Preliminary phytochemical screening of tubers of *Sauromatum guttatum* (Wall.) Schott.

S. No.	Constituents	Tubers Extract			
		PEESGT	CESGT	EESGT	AESGT
1.	Carbohydrates	-	-	+	+
2.	Glycosides	-	-	+	+
3.	Alkaloids	+	+	+	+
4.	Protein & Amino acid	-	-	-	-
5.	Tannins & Phenolic compounds	-	-	+	+
6.	Flavonoids	-	+	+	+
7.	Fixed oil and Fats	-	-	-	-
8.	Steriods & Triterpenoids	+	-	+	+
9.	Mucilage & Gums	+	-	+	+
10.	Waxes	-	-	-	-

Abbr.: -: Absent, +: Present, PEESGT: Petroleum ether extract of *Sauromatum guttatum* (Wall.) Schott. Tubers, CESGT: Chloroform extract of *Sauromatum guttatum* (Wall.) Schott. Tubers, EESGT: Ethanolic extract of *Sauromatum guttatum* (Wall.) Schott. Tubers, AESGT: Aqueous extract of *Sauromatum guttatum* (Wall.) Schott.Tubers

Table No. 2. : Preliminary phytochemical screening of leaves of *Sauromatum guttatum* (Wall.) Schott.

S. No.	Constituents	Leaves Extract			
		PEESGL	CESGL	EESGL	AESGL
1.	Carbohydrates	-	-	+	+
2.	Glycosides	-	-	+	+
3.	Alkaloids	-	+	+	+
4.	Protein & Amino acid	-	-	-	-
5.	Tannins & Phenolic compounds	-	-	+	+
6.	Flavonoids	-	+	+	+
7.	Fixed oil and Fats	-	-	-	-
8.	Steriods & Triterpenoids	+	-	+	+
9.	Mucilage & Gums	+	-	+	+
10.	Waxes	-	-	-	-

Abbr.: -: Absent, +: Present, PEESGL: Petroleum ether extract of *Sauromatum guttatum* (Wall.) Schott. Leaves, CESGL: Chloroform extract of *Sauromatum guttatum* (Wall.) Schott. Leaves, EESGL: Ethanolic extract of *Sauromatum guttatum* (Wall.) Schott. Leaves, AESGL: Aqueous extract of *Sauromatum guttatum* (Wall.) Schott. Leaves

4. CONCLUSION

Preliminary phytochemical screening of Petroleum Ether, chloroform, ethanol and aqueous extract of tubers and leaves were carried out which revealed the presence of various active phytoconstituents.

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