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Phytochemical analysis of *Semecarpus Anacardium* plant from Washim district

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Abstract

The present research work is conducted in order to search the qualitative analysis of the plant material of *Semecarpus anacardium*. Qualitative phytochemical evaluation was carried out to test the presence of alkaloids, flavonoids, carbohydrate, tannin, saponin, amino acid and phenol, glycoside in the methanol, petroleum ether and acetone extracts of plant material using Soxhlet extraction methods. The present effort is targeted on the evaluation of the phytochemicals.

Keywords: *Semecarpus anacardium*, Soxhlet apparatus, Methanol, Petroleum ether, Acetone Phytochemical etc.

Introduction

Phytochemistry is defined as the study of chemical composition of medicinal plants or phytochemicals. Today we are witnessing a rapid growth of herbal drug industry and this growth story is accompanied by search of new herbal drugs. Standardized herbal extracts and phytochemicals are in huge demand for applied research as well as for commercial use. The identification of biologically active compounds is an essential requirement for quality control and dose determination of plant based drugs.

The phytochemical analysis of the methanolic extracts of leaves of revealed the presence of flavonoids, alkaloids, steroids, phenols, carbohydrates and anthraquinones. While they belated other chemical compound such as tannins, saponins, terpenoids, amino acids and phytosterols *Semecarpus anacardium* is a moderately sized deciduous tree, reaching upto height of 12-15. Meter and girth of 1.25 meter. Bark is rough, dark brown in color. Leaves are large, simple, obviate-oblong and 9.0-30.0 cm long. Curvaceous covered with five pale pubescence. Plant is distributed in the various parts of Washim District Maharashtra. The tree is not found under cultivation but is common in forests often found occurring with soil climate and soil making nut tree is common throughout the hoppers parts of India. Semi-arid climatic condition and light to medium gravelly soils with good drainage are most suitable for raising the plantation. Propagation material plant is propagated by seeds. The seed viability is 6 months. Lakhey, P. and Pathak, J (2021) [2]. In the present work of phytochemical analysis were carried out in to plant that is *Semecarpus anacardium*.



Fig 1: Leaves, Stem and Fruits of *Semecarpus anacardium*

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Material and Method

Collection of fresh plant material of *Semecarpus anacardium* is collected from different parts of Washim district, maharashtra, India. It commonly occur in non cultivated land along Place with road side shady moist and material washed under tap water for 2-3 times to remove soil Particles and dust. The plant material Shaded for 12 days after drying Plant material grinded into fine powder and then transfer into airtight container with proper labeling for further use. Qualitative phytochemical analysis of leaves and stem of *Semecarpus anacardium*.

Preparation of Solvent Extract: Shaded dreid leaves were used for prepration of powder with electric blender. These powder were stored in plastic container for further use. Around 10gm powder used for extraction in 250 ml methanol, petroleum ether and acetone solvent. Vijayalakshmi et al., (2012) [3]. The extraction was done by soxhlet extraction techniques till dark colouration of the solvent and discolouration of powder extract.

Test for Alkaloids

Wagner's test: Add 2 ml Wagner's reagent reddish brown pot was formed.

Test for Tannins: Take sample extract test tube. Add solution of potassium dichromate yellow pot was formed detect presence of tannin

Test for Saponins (foam test): A small quantity of the sample was taken in a test tube. Add amount of sodium bicarbonate honeycomb like foam formation absence. Detect the presence of Saponins.

Test for Flavonoids: Take a sample extract in test tube. Add 5-10 drops of hydrochloric acid. Add small pieces of magnesium dichromate in test tube or lead acetate test (yellow).

Test for Terpenoids: Extract was mix in 2ml of chloroform and concentration H₂SO₄ Formation of reddish brown coloration.

Test for Phenol: Take equal volume of sample extract of add 5% ferric chloride appereance of dark green of bluish green colour.

Test for Carbohydrates

Benedict's test: Take a small amount of plant extract in test tube add small quantity of a Benedict's solution and mix properly then boil the sample for 2 minute and cool it red pot format then presence of carbohydrate detected.

Test for Amino acid

Millions test: A small quantity of test sample was taken in a test tube at 3ml millions reagent the white pot change into pink colour.

Test for Glycosides: To know volume of extract 0.5ml of Benzene and dilute ammonia solution was added and formation of Green and blue colour.

Table 1: Phytochemical analysis of *Semecarpus anacardium* leaf:-

Test	Methanol	Petroleum ether	Acetone
Alkaloids	+	+	+
Tannin	-	-	+
Saponin	-	+	+
Flavonoids	+	+	-
Terpenoids	-	-	-
Phenol	-	-	+
Carbohydrates	+	-	-
Amino acid	-	+	-
Glycoside	+	-	-



Fig 2: Methanol Extract of leaf of *Semecarpus anacardium* **Fig 3:** Petroleum ether extract of leaf of *Semecarpus anacardium*



Fig 4: Acetone extract of leaf of *Semecarpus anacardium*

Table 2: *Semecarpus anacardium* Stem

Test	Methanol	Petroleum ether	Acetone
Alkaloids	+	+	+
Tannin	+	-	+
Saponin	+	+	+
Flavonoids	-	-	-
Terpenoids	-	-	-
Phenol	+	+	+
Carbohydrates	-	+	-
Amino acid	+	-	-
Glycoside	-	+	+



Fig 5: Methanol Extract of Stem of *Semecarpus anacardium* Petroleum Ether Extract of Stem of *Semecarpus anacardium*



Fig 6: Acetone extract of Stem of *Semecarpus anacardium*

Results and Discussion

Photochemical analysis of methanol extract of leaf of *Semecarpus anacardium* show positive test for alkaloids, flavonoids, carbohydrate, glycoside and phenol and show negative test for all other secondary metabolites.

Photochemical analysis of petroleum ether extract of leaf of *Semecarpus anacardium* show positive test for alkaloids, flavonoids, glycoside and amino acid and show negative test for all other secondary metabolites.

Photochemical analysis of acetone extract of leaf of *Semecarpus anacardium* show positive test for alkaloids, tannin, saponin, phenol and amino acid and show negative test for all other secondary metabolites.

Photochemical analysis of methanol extract of stem of *Semecarpus anacardium* show positive test for alkaloids, tannin, saponin, phenol and amino acid show negative test for all other secondary metabolites.

Photochemical analysis of petroleum ether extract of stem of *Semecarpus anacardium* show positive test for alkaloids, saponin, phenol, carbohydrate and glycoside and show negative test for all other secondary metabolites.

Photochemical analysis of acetone extract of stem of *Semecarpus anacardium* show positive test for alkaloids, tannin, saponin, phenol and glycoside and show negative test for all other secondary metabolites.

Conclusion

Methanol, Petroleum ether and Acetone extracts of *Semecarpus anacardium* show potential appearance and used for various medicinal properties. It can be concluded that with its vast and diversified phytochemical constituents and medicinal properties. The plant are now well adapted in different parts of the Washim district of Maharashtra state and have the good export potential for the phytochemical constituents extracted from plant species.

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