

PHYTOCHEMICAL SCREENING ON HIBISCUS ROSASINENSIS LEAVES

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Article Received on 30/01/2024

Article Revised on 20/02/2024

Article Accepted on 10/03/2024

ABSTRACT

Hibiscus rosasinensis is member of the family Malvaceae and grows as an evergreen herbaceous plant in tropical regions. Hibiscus species are used in the treatment of various diseases. They have many pharmacological properties including antimicrobial, antipyretic, antispasmodic, hypotensive, antifungal, anti-inflammatory and many more. Therefore, the present study was aimed at evaluating the antibacterial activity of acetonitrile extract from the leaves of *H. rosasinensis* and identification of secondary metabolites in these extracts. The phytochemical analyses showed the presence of flavonoids, terpinoids, tannin, quinones, steroids, and phenols in hibiscus leaf extract.

KEYWORDS: Hibiscus rosasinensis, antimicrobial, antipyretic, antispasmodic, hypotensive, antifungal, anti-inflammatory, flavonoids, terpinoids, tannin, quinones, steroids, and phenols.

INTRODUCTION

China rose or “Queen of tropics” is often a popular name for the gorgeous flowering plant *Hibiscus rosasinensis*, as it is mainly found in south-east China and some islands in the Pacific and Indian Ocean. Dark flowers extract is used to make eyeliners, and in shoeblacking. It was believed that the species was given the name “*H.rosasinensis* which means “Rose of China” in Latin, by the famous Swedish biologist, Carolus Linnaeus in the early 1750s. Traditionally Hibiscus flowers has been reported to possess antitumor properties, as well as have been used as analgesic, antipyretic, anti-asthmatic, and anti-inflammatory agents. Several studies have proved the presence of anti-oxidant, anti-fungal, and antimicrobial properties in flowers of *Hibiscus rosasinensis*. Research on extracts of stems, roots, leaves, and flowers from Hibiscus have revealed that its photochemical components contributed to beneficial findings to human’s health such as antioxidant activity. The flowers were also used as a contraception agent for males and females, as well as in rural regions of India. Current scientific literature suggests that more than 50% of today’s clinical medications were of natural product origin. Many of them have played a significant role in pharmacological industry and in developing better therapies for various diseases. This plant is economically very essential owing to the herbal products and medicinal uses.

**HIBISCUS ROSASINENSIS****SYSTEMATIC POSITION OF HIBISCUS ROSASINENSIS****Taxonomic hierarchy of *Hibiscus rosasinensis***

Kingdom: Plantae
Clade: Tracheophytes
Clade: Angiosperms
Clade: Eudicots
Clade: Rosids
Order: Malvales
Family: Malvaceae
Subfamily: Malvoideae
Tribe: Hibisceae
Genus: Hibiscus
Species: *H. rosa-sinensis*
Binomial name: *Hibiscus rosa-sinensis*

LANGUAGES	TRADITIONAL NAME
English	Shoe flower
Telugu	Mandara
Hindi	Gurhal
Tamil	cembarutti
Bengal	Jaba
Malayalam	Chemparati

MATERIALS AND METHODS

Collection of Plant Material

Fresh plants were collected from a place named Muppala near Narasaraopet in Andhra Pradesh, India. The leaves were separated, washed under running tap water and shade dried at room temperature. The dried leaves were ground to fine powder using a blender. The powder was preserved in an air tight bottle for further use.

Preparation of leaf extracts (Maceration)

30 grams of the leaf powder was mixed with 250 ml of solvent and kept shaking for about 3-7 days. Solvent used for extraction was Acetonitrile. The collected supernatants were used for phytochemical screening.

PHYTOCHEMICAL SCREENING

The presence of different phytochemicals extracted by using solvent Acetonitrile as was confirmed by the following tests.

Qualitative analysis of phytochemicals

Test for carbohydrates

Molish test

Take 2ml of extract and then add 2ml of Molish reagent and shaken well. Then add 2ml of conc.H₂SO₄ was added from sides of the test tubes. A reddish violet ring appeared immediately at the junction of two layers indicating the presence of carbohydrates.

Test for Alkaloids

Mayer's Test

To the extract added 1% Hydrochloric acid and 6 drops of Mayer's reagent and Drangendroff's reagent was added. An organic precipitate indicated the presence of alkaloids in the sample.

Test for cardiac glycosides (Keller-Killiani test)

0.5gm of extract diluted to 5ml of water then added 2ml of glacial acetic acid containing one drop of ferric chloride solution. This was underlayered with 1ml of concentrated sulphuric acid. A brown ring at the interface indicates the presence of a deoxy sugar characteristic of cardenolides.

A violet ring may appear below the brown ring, while in the acetic acid layer a greenish ring may form just above the brown ring and gradually spread throughout this layer.

Test for Terpenoids

To 2ml of extract add 5ml of solvent and 2ml of conc.H₂SO₄ was added reddish-brown colour was observed.

Test for steroids

To 2ml of leaf extract was mixed with 1ml of Isopropyl alcohol and later 2-3 drops of glacial acetic acid was added and heat and add conc.H₂SO₄. Orange colour formation indicated the presence of steroids.

Detection of Flavonoids

Lead acetate test

The aqueous extract was treated with few drops of 10% lead acetate solution. The formation of yellow precipitate confirmed the presence of flavonoids.^[13]

Test for Saponins

To 2ml of extract add water and shaken vigorously for frothing presence visualizes saponins. Formation of froth (or) foam was observed.

Test for Phenols

To 1ml of extract add alcohol and few drops of ferric chloride solution. Greenish yellow colour was observed.

Test for Tannins

5ml of extract was added to few drops of 1% lead acetate. A yellow precipitate indicated the presence of tannins.^[14]

Test for Quinones

To 2ml of extract add conc. HCl and mix. Green colour was observed.

RESULTS

Screening of Phytochemicals in *Hibiscus rosasinensis* leaves.

Type of Test	Positive	Negative
Test for Carbohydrates		
Molish Test	-	✓
Test for Alkaloids		
Mayer's Test	-	✓
Test for Cardiac glycosides	-	✓
Test for Terpenoids	✓	-
Test for Steroids	✓	-
Test for Flavonoids	✓	-
Test for Saponins	-	✓
Test for Phenols	✓	-
Test for Tannins	✓	-
Test for Quinonines	✓	-

CONCLUSION

Qualitative phytochemicals were screened in *Hibiscus rosasinensis*, according to the results terpenoids, steroids, flavonoids, tannins, phenols, and Quinonines are present. Based on the results, it can be concluded that the *Hibiscus rosasinensis* leaf extracts can be used in the treatment of antioxidants and antimicrobial activity.

ACKNOWLEDGEMENT

The authors are thankful to Management Principal, Narasaraopeta Institute of Pharmaceutical Sciences, Narasaraopet, Palnadu dist, Andhra Pradesh, India for permitting and providing necessary facilities for carrying out to do the work.

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