



## Phytochemical Evaluation and Medicinal Prospects of *Hibiscus rosa-sinensis* in Traditional and Contemporary Healthcare

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### ABSTRACT :

*Hibiscus rosa-sinensis* is an ornamental plant extensively utilized for its medicinal benefits. Phytochemical investigations reveal that it contains bioactive constituents such as flavonoids, tannins, saponins, and phenolic acids—each known for contributing to health benefits. Traditionally used to treat skin ailments, fevers, and reproductive irregularities, its pharmacological effects are now scientifically validated. Its antioxidant, antimicrobial, and anti-inflammatory actions suggest potential roles in controlling blood pressure, managing diabetes, and improving reproductive well-being. The plant stands as a promising agent in herbal and modern therapeutic applications.

**Keywords:** *Hibiscus rosa-sinensis*, laboratory apparatus, decoction, phytochemical analysis, herbal medicine.

### Introduction

*Hibiscus rosa-sinensis*, a member of the Malvaceae family, holds a significant place in traditional systems such as Ayurveda and Traditional Chinese Medicine. Rich in pharmacologically active molecules, various parts of the plant—flowers, leaves, and seeds—are prepared as teas, extracts, or oils. The plant is noted for promoting heart health by managing blood pressure and cholesterol, improving circulation, and mitigating oxidative stress. Among the many *Hibiscus* species, *H. sabdariffa* and *H. rosa-sinensis* are especially acclaimed for their medicinal attributes. Scientific research affirms that their extracts offer multiple health benefits.



**Fig :- Hibiscus Flower and leaf**

### Phytochemicals and Pharmacological Actions

Recent studies highlight the plant's richness in compounds like flavonoids, saponins, and steroids. Ezza Zulkurnain et al. (2023) emphasized the role of these compounds in combating inflammation, oxidative stress, and microbial infections. Similarly, Dowara, Gogoi, and Saikia (2024) demonstrated the antibacterial activity of leaf extracts using agar well diffusion methods, especially effective against *E. coli*, *Salmonella typhimurium*, and *Bacillus subtilis*. Acetone extracts exhibited the most potent results.

Chakraborty et al. (2023) quantified quercetin content in the flower extracts using HPTLC and HPLC methods, validating the presence of this potent antioxidant and anti-inflammatory agent.

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## Aim and Objectives

The purpose of this research is to detect major phytochemicals in *Hibiscus rosa-sinensis* and examine their therapeutic relevance by comparing ethnomedicinal uses with modern pharmacological insights, thereby positioning the plant as a potential source for novel medical formulations.

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## Materials and Methods

### *Sample Collection and Authentication*

Fresh leaves were collected from Bilaspur, Chhattisgarh, and identified at D.L.S. P.G. College on April 9, 2025.

### *Extract Preparation*

50g of crushed leaves were simmered in 40mL of distilled water until the volume reduced to 20mL. The extract was filtered and cooled for analysis.

### *Phytochemical Screening*

Standard qualitative tests were performed:

- Tannins: Ferric chloride (green coloration)
- Saponins: Foam test (persistent froth)
- Phenols: Ferric chloride (deep blue)
- Terpenoids: Salkowski's test (reddish-brown interface)
- Steroids: Liebermann–Burchard test (blue ring)
- Anthocyanins: pH-dependent color change (acid-red, alkali-green)

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## Results and Discussion

Compound	Test Used	Observations
Tannins	Ferric chloride	Green coloration observed
Saponins	Foam test	Stable froth seen
Phenols	Ferric chloride	Deep blue coloration
Terpenoids	Salkowski's test	Reddish-brown at interface
Steroids	Liebermann–Burchard test	Formation of blue ring
Anthocyanins	pH-dependent color change	Visible shift in color

The qualitative analysis affirmed the presence of therapeutically active constituents. These phytochemicals align with previous findings and suggest benefits in managing heart conditions, skin diseases, metabolic imbalances, and liver disorders. The detection of glycosides and saponins supports their role in blood pressure and lipid control.

This research validates the significance of *Hibiscus rosa-sinensis* as a phytochemical-rich plant with noteworthy medicinal applications. Future studies focusing on compound isolation and clinical trials are necessary to further establish its efficacy and promote standardized use.

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