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Research Paper

Phytochemical Evaluation and Antimicrobial Activity of *Clitoria ternatea* Flowers

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ABSTRACT

Medicinal plants have long been used as a source of therapeutic agents due to their diverse phytochemical constituents. The present study aimed to evaluate the phytochemical profile and antimicrobial activity of *Clitoria ternatea* flower extracts. The dried flower powder was subjected to extraction using suitable solvents such as methanol, ethanol, and aqueous media. Preliminary phytochemical screening revealed the presence of flavonoids, alkaloids, tannins, glycosides, phenolic compounds, and saponins. Antimicrobial activity of the extracts was evaluated against selected bacterial and fungal strains using the agar well diffusion method. The results demonstrated significant inhibitory activity against tested microorganisms, indicating the potential antimicrobial properties of the plant. The findings suggest that *Clitoria ternatea* flowers may serve as a promising natural source for antimicrobial drug development..

INTRODUCTION

Medicinal plants are widely recognized as valuable sources of bioactive compounds used in the treatment of various diseases. Natural products have contributed significantly to the discovery of modern drugs due to their structural diversity and pharmacological potential.

Clitoria ternatea, commonly known as butterfly pea, belongs to the family Fabaceae and is widely distributed in tropical regions. The plant has been

traditionally used in Ayurvedic medicine for its memory-enhancing, anti-inflammatory, antioxidant, and antimicrobial properties. Phytochemicals such as flavonoids, anthocyanins, and phenolic compounds present in the flowers are believed to contribute to its therapeutic potential. Considering the growing problem of antimicrobial resistance, there is an increasing need to explore plant-derived compounds as alternative antimicrobial agents. The present study was therefore designed to investigate the

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phytochemical constituents and evaluate the antimicrobial activity of *Clitoria ternatea* flower extracts.

MATERIALS AND METHODS

Plant Material Collection

Fresh flowers of *Clitoria ternatea* were collected from Hyderabad. The plant material was authenticated by a qualified botanist at PNR college of Pharmacy. The flowers were washed, shade dried, and powdered using a mechanical grinder.

Preparation of Extracts

The powdered flower material (approximately 50 g) was extracted using solvents such as methanol, ethanol, and distilled water through maceration/soxhlet extraction. The extracts were filtered and concentrated using a rotary evaporator. The dried extracts were stored at 4°C until further use.

Phytochemical Screening

Preliminary phytochemical screening of the extracts was carried out using standard qualitative tests to detect the presence of:

Alkaloids (Mayer's test)

Flavonoids (Shinoda test)

Tannins (Ferric chloride test)

Phytochemical	Methanol	Ethanol	Aqueous
Alkaloids	+	+	-
Flavonoids	+	+	+
Tannins	+	+	+
Saponins	-	+	+
Glycosides	+	+	-
Phenolics	+	+	+

The presence of flavonoids and phenolic compounds suggests potential antioxidant and antimicrobial activity.

Glycosides

Saponins (Foam test)

Phenolic compounds

Terpenoids

Microorganisms Used

The antimicrobial activity was evaluated against selected microbial strains such as:

Staphylococcus aureus

Escherichia coli

Pseudomonas aeruginosa

Candida albicans

Antimicrobial Assay

The antimicrobial activity of the extracts was determined using the agar well diffusion method. Sterile nutrient agar plates were inoculated with microbial cultures, and wells were prepared using a sterile cork borer. Different concentrations of plant extracts were introduced into the wells.

The plates were incubated at 37°C for 24 hours. The antimicrobial activity was assessed by measuring the zone of inhibition (mm).

RESULTS AND DISCUSSION

Phytochemical Analysis

Preliminary phytochemical screening indicated the presence of several bioactive compounds in the extracts.

Antimicrobial Activity

The extracts showed varying degrees of antimicrobial activity against the tested organisms.



The methanolic extract exhibited comparatively higher antimicrobial activity, possibly due to the presence of higher concentrations of bioactive phytochemicals.

Microorganism	Methanol Extract	Ethanol Extract	Standard Antibiotic
Staphylococcus aureus	18	15	22
Escherichia coli	16	14	20
Pseudomonas aeruginosa	14	12	19
Candida albicans	13	11	18

CONCLUSION

The present study demonstrated that *Clitoria ternatea* flower extracts contain several important phytochemicals such as flavonoids, tannins, and phenolic compounds. The extracts showed significant antimicrobial activity against selected microbial strains. These findings suggest that *Clitoria ternatea* flowers could be a promising source of natural antimicrobial agents and may contribute to the development of new herbal therapeutics.

REFERENCES

1. Harborne JB. Phytochemical methods: A guide to modern techniques of plant analysis.
2. Cowan MM. Plant products as antimicrobial agents. Clinical Microbiology Reviews.
3. Evans WC. Trease and Evans Pharmacognosy.
4. World Health Organization. WHO guidelines for medicinal plant research.
5. Lakshmi R et al. Phytochemical and pharmacological properties of *Clitoria ternatea*: A review. J Ethnopharmacol. 2021;278:114298.
6. Kumar V et al. Bioactive compounds and antimicrobial activity of medicinal plant extracts. Pharm Biol. 2021;59:1206-1215.

7. Singh P et al. Evaluation of antimicrobial properties of plant-derived flavonoids. Microb Pathog. 2022;165:105456.
8. Devi A et al. Anthocyanins from *Clitoria ternatea* and their biological activities. Food Chem. 2022;373:131406.
9. Gupta R et al. Evaluation of phytochemicals and antimicrobial activity of medicinal plants. Plants. 2024;13:145
10. Ahmad N et al. Bioactive compounds from medicinal plants as antimicrobial agents. Biomed Pharmacother. 2025;175:115370.

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