Antibacterial activity of leaves and flowers of *Clitoria ternatea* (butterfly pea plant) in Sri Lanka by using different solvent extracts

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Introduction

Recent antibiotic resistant outbreaks show that it is important to discover novel natural antimicrobial agents. *Clitoria ternatea* is a commonly grown plant in Sri Lanka which is believed to have a high phytochemical content along with potential antibacterial activity. The current study was undertaken to determine the antibacterial activity of the leaves and flower extracted using different solvent extracts (95% ethanol and 70% methanol) against *Escherichia coli* and *Staphylococcus aureus*.

Methodology

Plant samples were extracted using the maceration technique and the stock solution was prepared at 100 mg/ ml, 40 mg/ ml and 20 mg/ ml concentrations. Total phenolic content (TPC) was determined using Folic-Ciocalteu reagent assay while total flavonoid content (TFC) was determined based on aluminium chloride flavonoid assay. Antibacterial activity was assessed against *Staphylococcus aureus* (ATCC28923) and *Escherichia coli* (ATCC 25922) by using agar well diffusion method. Data was statistically analyzed using the IBM SPSS version 21 software.

Results

Inhibition zones against *S. aureus* in ethanolic extracts were 26.5±1.50 mm (100 mg/ ml), 23±1.00 mm (40 mg/ ml) and 7.5±0.50 mm (20 mg/ ml) while in methanolic extracts were 23.5±1.50 mm (100 mg/ ml), 21.6±1.00 mm (40 mg/ ml) and 6.5±0.40 mm (20 mg/ ml). Inhibition zones against *E. coli* in ethanolic extract were 15.50 ±1.50 mm (100 mg/ ml), 13.50±1.70 mm (40 mg/ ml) and 6.80±1.00 mm (20 mg/ ml) while in methanolic extracts were 26±1.30 mm (100 mg/ ml), 23.10±1.00 mm (40 mg/ ml) and 7.5±0.50 mm (20 mg/ ml). A positive correlation was observed between TPC and the antibacterial activity against *S. aureus* (R~ 0.720) and *E. coli* (R~ 0. 810) in all sample extracts separately. Similarly, positive correlation was observed between (TFC) and antibacterial activity against *S. aureus* (R~ 0.640) and *E. coli* (R~ 0.800).

Conclusion

Higher inhibition zones against *S. aureus* were observed in the ethanolic leaves and flower extracts than that of methanolic sample extracts. Higher inhibition zones against *E. coli* were observed in methanolic leaves and flower extracts than that of ethanolic sample extracts.

Keywords: Clitoria ternatea, phytochemicals, antibacterial activity.

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