

Antimicrobial activity of *Atalantia ceylanica* leaves against *Escherichia coli* and methicillin resistant *Staphylococcus aureus*

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Introduction and Objectives: Use of herbal medicine for infections has become a novel trend due to the development of resistance to available antibiotics. *Atalantia ceylanica*, known as 'yakinaran' in Sinhala, is utilized in Ayurveda to treat various diseases. Its therapeutic potential for the treatment of bacterial infections has not yet been extensively researched. The present study aims to determine the antibacterial activity of the methanolic extract of *A. ceylanica* against *Escherichia coli* (ATCC35218) and methicillin-resistant *Staphylococcus aureus* (MRSA) (ATCC33591).

Methods: An aqueous extract of leaves of *A. ceylanica* was prepared by extracting 100g of plant material with 300ml of water. The extract was dried and 1g of the dried extract was re-dissolved in 2 mL of methanol. Agar well diffusion assay was used to evaluate the antibacterial activity. The broth macrodilution method was used to determine the minimum inhibitory concentration (MIC) with 10 tubes of serial dilution ranging from 200mg/ml-0.05mg/ml. Each tube was examined to observe turbidity to determine the MIC and subcultured on Mueller Hinton agar plates and incubated for 24 hours at 37 °C ± 2°C to determine the minimum bactericidal concentration (MBC). Vancomycin was used as the standard for MRSA and, ciprofloxacin was used as the standard for *E. coli*.

Table. Antibacterial activity of the tested products.

Inhibition zones against bacterial strains		MIC and MBC of <i>Atalantia ceylanica</i> plant extract	
Organisms	Diameter Zone of inhibition (mm) (mean ± SD)		mg/ml
	Plant extract 500mg/ml	Vancomycin 30µg/ml	
<i>S. aureus</i> (MRSA) (ATCC 33591)	12.6 ± 0.2	24.6 ± 0.1	32
		ciprofloxacin (5µg/ml)	
<i>E. coli</i> (ATCC 35218)	26.0 ± 0.2	31.6 ± 0.2	80

Results: Both MIC and MBC values for the extract were same for the pathogens tested. According to MIC and MBC results, MRSA was more susceptible for the extract (Table).

Conclusions: The study showed that the methanol extract of *A. ceylanica* showed potential antibacterial activity for methicillin-resistant *S. aureus* and *E. coli*. Therefore, *A. ceylanica* may be a potential candidate for further investigation for the development of new antibacterial agents.

Keywords: *A. ceylanica*, *E. coli*, methicillin resistant *S. aureus*, Antibacterial activity, MIC, MBC

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