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Evaluation of *in-vitro* Antimicrobial Activity of Leaf Extract of *Mangifera zeylanica*

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Background: The use of herbal plants in the development of antimicrobial dosage forms plays a major role. *Mangifera zeylanica* is an endemic plant which is commonly known as "Etamba" in Sri Lanka. The stem bark of this plant has shown antimicrobial activity in previous research studies.

Objective: To evaluate the antimicrobial activity of *M. zeylanica* leaves against selected microorganisms

Methods: Leaves of the plant *M. zeylanica* were collected from Gampaha District Sri Lanka, and authenticated by the National Herbarium, Sri Lanka. The leaves were sequentially reflux extracted with ethyl acetate and ethanol and investigated the antimicrobial activity against *Staphylococcus aureus* (ATCC 25923), *Escherichia coli* (ATCC 25932), *Candida albicans* (ATCC 10231), *Pseudomonas aeruginosa* (ATCC 27953), and *Staphylococcus epidermidis* (ATCC 12228) using agar well diffusion assay. Ampicillin (0.01 mg/mL), Gentamycin (0.01 mg/mL), Nystatin (0.1 mg/mL), Gentamycin (0.01 mg/mL) and Clindamycin (0.002 mg/mL) were used as the positive controls respectively, while sterile distilled water was used as the negative control. Minimum Inhibitory Concentration (MIC) and Minimum Bacterial Concentration (MBC) were tested against concentrations from 200 mg/mL – 0.0245 mg/mL of ethanolic leaf extract.

Results: The highest antimicrobial activity was shown at 200 mg/mL of both extracts against S. *aureus*, *E. coli*, *C. albicans*, *P. aeruginosa*, and *S. epidermidis*, with the mean(±SD) inhibition zones as follows: by ethanol extract, 24.00(±0.00) mm, 19.80(±0.40) mm, 26.90(±0.40) mm, 24.80 (±1.30) mm, and 22.00 (±0.30) mm, respectively; and by ethyl acetate leaf extract, 23.40 (±0.20) mm, 18.70(±0.30) mm, 25.90(±0.50) mm, 24.40(±0.50) mm, 18.20(±0.30) mm, respectively. Ethanolic leaf extract had MIC and MBC values of 25 mg/mL.

Conclusions: The study concludes that the ethanolic leaf extract of *M. zeylanica* possesses the highest antimicrobial activity in comparison to ethyl acetate leaf extract, and with further investigation, it can be used as a potential therapeutic agent for microbial infections.

Keywords: *Agar well diffusion, MBC, MIC, Reflux extraction*