

SUSCEPTIBILITY OF BACTERIA TO MORINGA OLEIFERA LAM. BARK EXTRACT

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RESUMO

Introduction: Medicinal plants are an inexhaustible source of active metabolites that could be used in the pharmaceutical industry. Among them, *Moringa oleifera* Lamarck is a multipurpose tree popular for its nutritional and medicinal properties. Although many of them are known, not all are based on scientific research and, especially in Argentina, no systematic study has been carried out to date. Objective: The present study aimed to evaluate the antibacterial activity of *M. oleifera* Lam. bark dry extract against *Escherichia coli* ATCC® 25922™, *Pseudomonas aeruginosa* ATCC® 27853™ y *Staphylococcus aureus* ATCC® 25923™. Methods: The hydroethanolic extract was obtained by maceration of *M. oleifera* Lam. bark, with 30° ethanol, followed by percolation. The extract was concentrated using a rotary evaporator according to the updated version of the Argentine Pharmacopoeia and dried at 35 °C. The antibacterial activity was determined against *Escherichia coli* ATCC® 25922™, *Pseudomonas aeruginosa* ATCC® 27853™ y *Staphylococcus aureus* ATCC® 25923™. The Minimum Inhibitory Dose (MID) was determined by the disc diffusion test and the inhibition diameters (ID) were measured. The effective dose used on each disc was 8; 4; 2; 1; 0.75; 0.5 and 0.25 mg. A disc impregnated with sterile water was used as a negative control. Commercial discs of ciprofloxacin 5 µg (Britania S.A., Argentina), colistin 10 µg (Britania S.A., Argentina), and erythromycin 15 µg (Britania S.A., Argentina) were used as a positive control. This test was performed in triplicate. The mean and standard deviation (SD) were obtained. The Minimum Inhibitory Concentration (MIC) and Minimum Bactericidal Concentration (MBC) were performed by the broth dilution method against bacterial strains that previously showed susceptibility in diffusion assays, and according to the Clinical and Laboratory Standards Institute guidelines. Results: The dry hydroethanolic extract of *M. oleifera* Lam. bark showed antibacterial activity against *S. aureus* ATCC® 25923™ with a MID=8.0 mg, an average ID= 6.7 mm (SD=0.3), a MIC >32 mg mL⁻¹ and a MBC > 128 mg mL⁻¹, and no activity was detected against *P. aeruginosa* ATCC® 27853™ and *E. coli* ATCC® 25922™. Conclusions: These results stimulate the search for antimicrobial activity of *M. oleifera* Lam. bark extracts against other Gram-positive pathogenic bacteria. In addition, they encourage the study with bark extracts from other tree species to determine the presence of secondary metabolites with antimicrobial activity. It is noted that this is an unprecedented investigation for the Argentine Republic.

PALAVRAS-CHAVE: Anti-Bacterial Agents, *Moringa oleifera*, Plant Extracts

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