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Assessment of Antimicrobial Efficacy of Banana Peel (*Musa paradisiaca*) Extracts and Determination of Minimum Inhibitory Concentration against Selected Oral Pathogens.

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Abstract

The peels of *Musa paradisiaca* apply to a wide range of applications, including antimicrobial applications, the production of face masks, hair masks, and biofuel. This study aimed to determine the antimicrobial activity of aqueous, ethanolic, and methanolic extracts of *M. paradisiaca* peels against selected oral pathogens. Ethanolic and methanolic extracts were concentrated by evaporating evaporation at room temperature. Powder (500 mg) was dissolved in 1 ml of 1% Dimethyl Sulfoxide (DMSO) for agar well diffusion assay. Gentamycin, Vancomycin and Fluconazole were used as positive controls for Gram-negative bacteria, Gram-positive bacteria and Candida respectively. DMSO (1%) served as the negative control. Inhibitory zones were measured after overnight incubation at 37°C. The Minimum Inhibitory Concentration (MIC) of the extracts was determined using a broth dilution assay. *S.aureus*, *E. coli*, *K. pneumonia*, and *C. albicans* exhibited mean inhibitory zone diameters of 23 ± 1.0 mm, 17 ± 3.0 mm, 21 ± 2.0 mm, and 5.6 ± 0.0 mm, respectively for methanol extract at 500 mg/ml. The respective controls exhibited mean zone of inhibition diameters of 26 ± 0.3mm, 20 ± 0.1 mm, 28 ± 0.0mm, and 12 ± 0.6 mm, respectively. For the ethanolic extract, *K. pneumonia* , *S. aureus*, *E. coli*, and *C. albicans* exhibited 27 ±0 mm, 18 ± 1.0 mm, 16 ± 3.0 mm, and 8 ± 0.0mm diameter mean inhibitory zones respectively, at 500 mg/ml. The respective controls exhibited mean zone of inhibition diameters of 28 ± 0.2 mm, 26 ± 0.0 mm, 20 ± 0.4 mm, and 12 ± 0.6 mm. The aqueous extract did not exhibit inhibitory effects against tested microorganisms. For the ethanol extract, MIC against *S. aureus* and *E. coli* was found to be 125 mg/ml. For methanolic extract, MIC against *K. pneumoniae* was 125 mg/ml. The methanolic and ethanolic extracts from *M. paradisiaca* peel have potential antimicrobial properties against the tested microbes, comparable to that of the positive controls.

Keywords: *Antimicrobial activity, M. paradisiaca, MIC*