

ANTIMICROBIAL ACTIVITIES OF TOTAL CRUDE SAPONINS FROM PARINARI CURATELLIFOLIA PLANCH EX. BENTH ROOT BARK

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Statement of the Problem: Parinari curatellifolia (Planch ex. Benth Chrysobalanaceae) is used in traditional medicine in Nigeria for the treatment of various diseases including microbial infections. The aim of the present study was to determine the potentials of the total crude saponins (TCS), extracted from the root bark of the plant against some selected pathogenic fungi and bacteria.

Methodology & Theoretical Orientation: The plant was collected from Zaria and authenticated at the Department of Biological Sciences, Ahmadu Bello University, Zaria, Nigeria. The TCS was extracted using standard procedures and was subjected to qualitative phytochemical tests. The antibacterial activities of TCS were evaluated against clinical isolates of *Staphylococcus aureus*, *Bacillus subtilis*, *Escherichia coli*, and *Pseudomonas aeruginosa* using the cup-plate method. The TCS demonstrated strong antibacterial activities with zones of inhibition (in diameter) ranging between 8.0 and 21.0 mm, showing concentration-dependent responses on each of the test microorganisms. *Staphylococcus aureus* was the most susceptible producing the longest zone of inhibition (21.0 mm) at 30 mg/mL with MIC and MBC of 3.75 mg/mL, indicating that the TCS was bactericidal

on *S. aureus*. Similarly, the antifungal activities of the TCS were also evaluated using the agar diffusion cup-plate method against clinical isolates of *Trichophyton mentagrophytes*, *Trichophyton rubrum* and *Aspergillus niger* with typed isolates of *Candida albican* (ATCC 102311). TCS showed zones of inhibition ranging from 12–18 mm at 140 mg/mL on *Trichophyton mentagrophytes*, *Trichophyton rubrum* and *Aspergillus niger*. An MIC₉₀ and MFC₉₀ of 195 µg/mL were obtained for *Aspergillus niger* using the micro-broth dilution. This investigation revealed that the total crude saponins possessed fungicidal effect on *Aspergillus niger*. There was no activity observed on *Candida albican*.

Conclusion & Significance: This study has revealed both antifungal and antibacterial properties for the total crude saponins, extracted from *Parinari curatellifolia* root bark.

Recommendations: Further work should be conducted on the separation, isolation, characterization and evaluation of antimicrobial activity of the pure saponin(s) from this plant.

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