Exploring the Bioactivity of Khaya senegalensis (Desr.) A. Juss. for combating multiple drug-resistant Staphylococcus aureus infections

Sylvester Kaminta\textsuperscript{1} Daniel Boamah\textsuperscript{2} Henry Brew-Daniel\textsuperscript{2} Paa Gordon\textsuperscript{2} Susana Oteng-Mintah\textsuperscript{2} Borge Frimpong\textsuperscript{2}

\textsuperscript{1}Centre For Plant Medicine Research, Mampong-Akuapem, Ghana, Noguchi Memorial Institute for Medical Research, University of Ghana, Legon, Ghana,
\textsuperscript{2}Centre For Plant Medicine Research, Mampong-Akuapem, Ghana

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Since antiquity, antibacterial agents have been a blessing in the fight against diversified bacterial infections saving millions of lives. However, despite efforts to combat infections caused by multiple drug-resistant Staphylococcus aureus (MDRSA), infections due to MDRSA is still on the rise and remain a significant public health burden globally. Currently, effective antibiotics to address this urgent need are limited, warranting the search for new compounds using the medicinal approach to discover antimicrobial therapies. Here, we investigated the bactericidal effect of cold macerated 70% ethanolic stem bark extract of Khaya senegalensis (KS) on twenty MDRSA isolates, using the agar well-diffusion and micro-broth dilution techniques. The test organisms were challenged with two-fold dilution concentrations of extract, 100 to 6.25 mg/mL and 50 to 0.02 mg/mL for the agar well-diffusion and micro-broth dilution assays, respectively. Our work showed that the ethanolic extract from KS inhibited all the tested organisms with appreciable inhibition zones ranging from 18.3 ± 0.6 to 8.3 ± 0.6 mm in a dose-dependent manner compared to Ciprofloxacin (15 μg/mL) 15.3 ± 0.6 to 19.0 ± 0.0 mm. Also, the extract showed promising activity against the MDRSA strains with very low minimum bactericidal concentrations of 0.39 to 1.56 mg/mL. Further studies on phytochemical screening and bioassay-guided fractionation of extract from KS to isolate the bioactive compounds are ongoing.

Keywords: Antibiotics, Multiple drug-resistant, MDRSA, Inhibition zones, bioassay-guided