

# Antimicrobials, Multiple Drug Resistance & Antibiotics Resistance

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## Antimicrobial and antioxidant evaluation of hydroxylated hydroxamic acid from underutilized *Adansonia digitata* seed oil

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Hydroxylated fatty hydroxamic acid (ADX) was synthesized from underutilized *Adansonia digitata* seed oil (AD). The synthesis was monitored using Fourier Transform Infrared spectrometer (FTIR) and Nuclear Magnetic Resonance (1H NMR). ADX was characterized using X-ray Diffraction analysis (XRD), Scanning Electron Microscopy (SEM), particle size distribution (PSD), zeta potential and Thermogravimetric Analysis (TGA). ADX was further screened for its antimicrobial activity against certain Gram positive and Gram negative pathogenic organisms as well as its potential as antioxidant agent. The result revealed the most abundant fatty acid in AD to be C18:1 (36.55%). The 1H NMR confirmed the production of ADX with corresponding peaks. The PSD of ADX was monomodal with a mean size of 0.0541 µm while the zeta potential increased as pH increased. ADX exhibited antimicrobial activity against the test organisms except *E. coli* and *Salmonella enteritidis* with the highest activity against *Staphylococcus aureus* (28mm). ADX also had an appreciable in vitro antioxidant activity due to its capacity to scavenge DPPH (1,1-Diphenyl-2-picryl-hydrazyl) radical (IC<sub>50</sub> of 389.12ppm). The present study suggests ADX as a promising antimicrobial and therapeutic agent for scavenging free radicals.

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