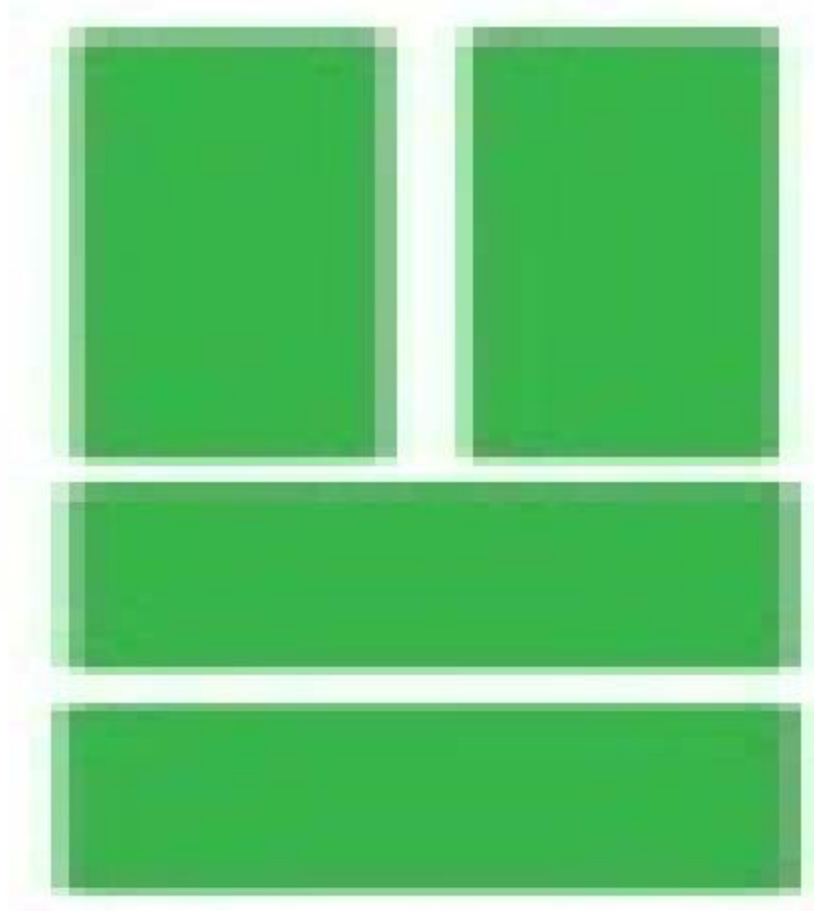


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**Screening for Antimicrobial Synergism between
Phytochemicals and Antibiotics against Methicillin-
Resistant Staphylococcus aureus (MRSA) using a
Microplate Method**

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Keywords: Microplate Method, MRSA, Minimum inhibitory concentration, Synergism, Antibiotics, Phytochemicals

Abstract

Agar diffusion techniques have been widely used over time to assay plant extracts for antimicrobial activity, but some problems have been identified with this technique over time. A microdilution technique was developed using 96-well microplates to indicate bacterial growth to determine their assay. The intent behind this study is to appraise the antimicrobial synergism of plant extracts and antibiotics; Antimicrobial synergism between aqueous extracts of *Hunteria umbellata*, *Moringa oleifera*, *Azadirachta indica*, and existing antibiotics (Azithromycin, Clindamycin, and Vancomycin) was examined on Methicillin-Resistant *Staphylococcus aureus* (ATCC 33591) using a Microplate method. The Microdilution technique, using a Microplate photometer was used to determine the Minimal Inhibitory Concentration (MIC) of both the plant extracts and antibiotics. The MICs of all antibiotics ranged between 0.39 and 100 µg/mL while those of plant extracts varied between 1.56 and 100 mg/ml. Combination studies were cross-examined using the microbroth dilution by characterizing all the expected effects as synergistic, additive, and antagonistic between various plant extracts, and the antibiotics. Synergy was observed more frequently with Azithromycin at a significant level of $P > 0.05$. The microplate method showed synergistic effects between the combination of antibiotics and plant extracts with a significant reduction in the MICs of the test antibiotics against strains of MRSA (ATCC 33591) justifying their use during antibiotic treatment. The synergistic interactions indicated that the inhibitory potentials of the plant extracts increased; combining natural products derived from Phytochemicals and antibiotics could be another way to mitigate and fight against antibiotics resistant infectious bacteria

Downloads

Download data is not yet available.

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