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Research Topic

SYNERGISTIC EFFECT OF LAVENDULA ANGUSTIFOLIA L OIL ON THE ANTIMICROBIAL ACTIVITY OF GENTAMICIN AGAINST METHACILLIN RESISTANT STPHYLOCOCCUS AUREUS

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Abstract

The growth of resistance to diverse antimicrobial agents by bacteria, fungi, viruses, parasites, etc. is a great test to the medical field for the treatment of infections caused by them, and hence, there is a pressing require searching for new and new antimicrobials. The antimicrobial activity of essential oils and gentamicin drug is well known. The aim of this study will to verify the existence of the synergistic antimicrobial outcome of lavender essential oil and combined with the drug gentamicin. W investigated the efficacy of the combinations of gentamicin and lavender essential oil against the following strains: *Staphylococcus aureus* MRSA KBrn13, *Staphylococcus aureus* MRSA KBrn23 and *Staphylococcus aureus MSSA KBrn*31. In order to decide the sensitivity of these microorganisms, I determined the minimum inhibitory concentration (MIC – Minimal Inhibitory Concentration) and Fractional Inhibitory Concentration (FIC) and kinetic growth of bacteria like colony Forming Unit (CFU) and that gentamicin drug functionalized with essential oils have significant antimicrobial potential against MRSA and MSSA. The study of the interaction of gentamicin with lavender essential oil will evaluated by the checkerboard method and Time kill assay. Synergistic interaction between lavender essential oil and gentamicin will be observed against *Staphylococcus aureus* KBrn 13 and *Staphylococcus aureus* MRSA KBrn 23 and *Staphylococcus aureus MSSA KBrn 31*. In particular, a very strong synergistic interaction will observed against *Staphylococcus aureus* MRSA (lavender essential oil and gentamicin drug MRSA 13 FIC index = 0.4; MRSA 23 FIC index = 0.2 and MSSA KBrn 31 FIC index = 1.2.

Lavender essential oil combination with antibiotic appears as a new strategy to combat the various resistant strains the combination of essential oil with gentamicin verified to be effective against MRSA and MSSA. Therefore, lavender is appearing as one of the best option to be used in combination with antibiotic to increase effectiveness against resistant bacteria.