Evaluation of Combined Antimicrobial activity of Leaf Extracts of *Psidium guajava* and *Moringa oleifera* against *Staphylococcus aureus*

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The combined effect of diverse plant extracts on microorganisms is a highly effective, new approach in modern pharmaceutical industry due to its excessive capability in treatment of serious infectious diseases caused by multidrug resistant bacteria. The purpose of this study is to determine the synergistic effect of *Psidium guajava* and *Moringa oleifera* against *Staphylococcus aureus.* In this study leaves extracts of *P. guajava* and *M oleifera* plants were tested in different concentrations individually and in different volume combinations (1:1, 2:1, 1:2) against *S. aureus.* Healthy plants leaves were selected, washed, dried and were grounded into a fine powder. Each plant material was extracted in a Soxhlet using methanol. Different dilutions of the resulting crude extracts were prepared separately to give final concentration in the range of 100, 80, 60, 40, and 20 mg mL^{-1} using methanol as the solvent. The two extracts of the same concentration were mixed in three different combination (volume) ratios (1:1, 2:1, and 1:2) to obtain solutions with a final volume of 30 mL. Agar-well diffusion method was used to investigate the synergistic antimicrobial activity. Resulting inhibition zones were compared with the commercially available antibiotic, Ofloxacin. The minimum inhibitory concentration 80% were 7.91 and 24.45 mg mL^{-1} respectively for *P. guajava* and *M. oleifera*. According to the results, antibiotic showed significantly high mean inhibitory zone diameter compared to different concentrations of extracts. With the increment of the concentration, the inhibition value increased except for the values obtained for combinations at concentration 20 mg mL^{-1}. The acquired data concluded that the synergistic antimicrobial effect of these two plants was less effective than their individual activity at high concentrations. However, the results revealed that at low concentration of 20 mg mL^{-1}, the synergistic antimicrobial effect of *P. guajava and M. oleifera* was increased for the volume ratios of 2:1 and 1:1(v/v) which shows the antimicrobial potential of combined leaf extract.

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