Assessment of Alternative Antimicrobial Substances on Staphylococcus epidermidis

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In order to combat the mounting antibiotic-resistance epidemic, the purpose of this study is to test alternative antimicrobial substances for potential treatment of Staphylococcus epidermidis infections. Previous research has shown that plant extracts and essential oils have been effectively used to inhibit the growth of numerous bacterial strains, which could provide effective and accessible antimicrobials for lower-income populations in the future. Utilizing the broth microdilution method to determine the minimum inhibitory concentrations (MICs) of clove extract, thyme extract, and the clinical antibiotic penicillin V potassium, separate 96 well plates were filled with nutrient broth and different concentrations of the corresponding antimicrobial. After the plates were inoculated with diluted S. epidermidis samples and incubated overnight at 37°C, in the end, the commercial antibiotic penicillin V potassium had a lower MIC against S. epidermidis than both the clove and thyme extracts, signifying that penicillin V potassium was the most effective in inhibiting S. epidermidis growth at the concentrations tested in this experiment. While the MIC of penicillin V potassium for S. epidermidis was 0.25 ug/mL, it was determined that the MIC of clove extract for S. epidermidis was 800 ug/mL, while the MIC of thyme extract was 3200 ug/mL. In relation to human health, if these plant extracts are being applied to an S. epidermidis infection and reach the concentration of their MIC, then the extract may be effective in inhibiting S. epidermidis growth and therefore prevent the infection from worsening. It is important to note, however, that lab results should be related with caution because they do not always reflect what will actually occur in the human body.

Awards Won:

Drug, Chemical &amp

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