Bacteria Hysteria: The Antibacterial Activity of Ginger

Nguyen, Baotram

The purpose of this investigation was to determine the antibacterial potential of the ginger rhizome. Ginger rhizome, commonly referred to as ginger root, was extracted with hexane, methanol, a mix of hexane and methanol, and water. The extracts were used to determine the zones of inhibition on three strains of bacteria: Escherichia coli, Staphylococcus epidermidis, and Bacillus cereus. The antibacterial activity of ginger extracts in concentrations of 10 ug/mL, 25 µg/mL, 50 µg/mL, and 100 µg/mL was determined using the agar disc diffusion method. The concentrations of 100 µg/mL inhibited growth in all cases except for the ginger extracted with water against Bacillus cereus. The ginger extracted with water was most effective against Escherichia coli. The ginger extracted with methanol, a mix of hexane and methanol, and water displayed similar inhibition of Staphylococcus epidermidis, while the ginger extracted with the mix of hexane and methanol exhibited the most inhibition of Bacillus cereus. Four samples of ginger, each extracted with one of the above solvents at a concentration of 100 µg/mL, were tested using gas chromatography-mass spectrometry analysis. The compounds camphene, eucalyptol, and gingerol were found to be common to all four extracts. The results show the ginger plant is a potential source of bioactive natural products. Further study could lead to the development of new pharmaceuticals with the potential to combat antibiotic resistant microorganisms.

Awards Won:

Third Award of $1,000