

Bacteria Hysteria: The Antibacterial Activity of Ginger

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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 $\mu\text{g/mL}$, 25 $\mu\text{g/mL}$, 50 $\mu\text{g/mL}$, and 100 $\mu\text{g/mL}$ was determined using the agar disc diffusion method. The concentrations of 100 $\mu\text{g/mL}$ 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 $\mu\text{g/mL}$, 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