The Effect of Natural Antimicrobials on Ampicillin Resistant E.coli and E.coli K12

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This experiment explores the effect of five natural antimicrobials on E.coli K12 and ampicillin-resistant E. coli. Due to the increase of drug-resistant bacteria, medical researchers are experimenting with natural antimicrobials to potentially implement them in traditional antibiotics. Natural antimicrobials may prove to be an effective alternative because, unlike antibiotics, they have natural defense mechanisms against bacteria that target multiple parts of the microorganism. Second metabolites in plants are responsible for inhibiting the growth of bacteria by rupturing the cell membrane, depleting energy sources, or tampering with nucleic acid. Natural antimicrobials like thyme are more versatile than antibiotics because they destroy multiple parts of the bacteria at once. Hypothesis: If ampicillin resistant E.coli and E. coli K12 cultures are treated with natural antimicrobials, then thyme will produce the largest zone of inhibition. The dependent variable is the size of the zone of inhibition formed by the antimicrobials. The independent variable is the type of antimicrobial added to each type of E.coli including thyme, clove, garlic, cranberry, and horseradish. To test the dependent variable, the five antimicrobials were added to antibiotic disks and placed on E.coli K12 and ampicillin-resistant E.coli cultures. Twenty four hours later, measure the zones of inhibition around each antibiotic disk. The data did not support the hypothesis because thyme did not produce a zone of inhibition and clove did not as well. Cranberry and garlic had an inhibitory effect on both ampicillin-resistant E.coli and E.coli K12 across all three trials.

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