

**WIU CENTENNIAL HONORS COLLEGE**  
**Thomas E. Helm Undergraduate Research Day 2023**

**Abstract**

Poster

Major: Biology

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**Antimicrobial Properties of Essential Oils**

**Audry Branson**

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Infections from pathogenic microbial agents are a health problem world-wide. Research is being done to develop methods to reduce infection rates. Some essential oils and plant extracts have been found to inhibit the growth of bacteria. This study investigated the potential antimicrobial properties of thyme and oregano essential oils. Petri dishes containing Mueller-Hinton agar were inoculated with Escherichia coli bacteria. Commercially-available antibiotic discs were placed on the bacterial culture. Paper disks were soaked with various concentrations of thyme and oregano oil, or olive oil as a control, and placed on the bacterial plates. As the microbes grew, areas around essential oils and antibacterial discs without growth were measured. These areas, zones of inhibition, corresponded to the antimicrobial strength of the given oil or antibiotic. Larger zones of inhibition indicated a stronger growth reducing effect. Results showed that both oregano and thyme oils had antibacterial properties that exceeded traditional antibiotics at some concentrations, with oregano oil having a greater inhibitory effect. The inhibitory effect of the oils in Mueller-Hinton broth cultures were also determined. Both essential oils reduced the growth of E. coli bacteria at even low concentrations of 250-500 dilution. These findings contribute to research on substances with potential to reduce growth of bacteria that may have medical applications as well as in the food industry involving microbes that result in food spoilage.