

WIU CENTENNIAL HONORS COLLEGE
Thomas E. Helm Undergraduate Research Day 2022

Abstract

Poster

Major Biology

Faculty Mentor: Sue Hum

Antimicrobial Properties of Essential Oils

Audry Branson

This study intends to investigate the antimicrobial properties of essential oils. Some essential oils and plant extracts have been found to inhibit the growth of bacteria. Prepared essential oils of various types will be purchased for laboratory use. Wells in nutrient agar will be created in Petri dishes, and essential oils will be added within these wells at the time of microbial inoculation. Several species of microbes will be used. In addition to the Petri dishes containing essential oils, identical Petri dishes will be streaked with the same species of microbes. These dishes will contain antibiotic discs as opposed to essential oils and function as a control group. As the microbes grow, areas around essential oil wells and antibacterial discs without growth will be measured. These areas, zones of inhibition, correspond to the antimicrobial strength of the given oil or antibiotic. Larger zones of inhibition indicate a stronger antimicrobial substance. Oils that have significant antimicrobial properties as compared to traditional antibiotics will be studied further by examining gene expression. This will be done with qPCR. This data may indicate which metabolic pathways in microbes are being affected by the essential oils. Results are expected to show that cinnamon oil has significant antibacterial properties; other oils' properties are less clear based on prior research. These findings may help combat increasing antibiotic resistance and may be used in other issues involving microbes such as food spoilage.