

Western Illinois University  
2021 Thomas E. Helm Undergraduate Research Conference

**Abstract**

---

Recorded Scholarly Presentation

Major: Biology

Faculty Mentor: Sue Hum Musser

**Examination of Antimicrobial Properties of Soybean Extracts**

**Mei Lin Zheng**

Soybeans are nutrient rich crops that are known to have many health benefits that include the reduction in the risks of cardiovascular diseases and cancer. Among one of the benefits of soybeans, it is known to exhibit antimicrobial effects against pathogenic bacteria. To test for this property, soybeans extracts will be placed in wells that are made in different Gram positive and Gram negative bacteria streaked Petri dishes. The results will be compared with the control group Petri dish that contains the antibiotic disks. Measuring the clear zones of inhibition and using a spectrophotometer to obtain an absorbance reading will quantify the amount of bacterial growth and will help determine the effectiveness of the soybean extracts against bacterial growth. Thin layer chromatography and enzyme assays will be utilized to identify the antimicrobial compounds in soybeans. RNA will be extracted from the bacterial samples to synthesize complementary DNA for real time polymerase chain reaction (QPCR). QPCR used in conjunction with data analysis softwares will be used to determine bacterial gene expression levels and will indicate the bacterial metabolic pathways affected by the antimicrobial compound. The results of this study will enhance the understanding of antimicrobial activities of soybean extracts. Due to bacteria developing resistance to several types of antibiotics, the search for new compounds with antimicrobial effects will always be in demand. Information found regarding antimicrobial soybean compounds can potentially aid in the development of new antibiotics against pathogenic diseases.