Dissecting the Black Walnut

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The purpose of this project is to determine if black walnuts, the walnut or exocarp have antibacterial properties. Black walnuts have been reported to have many health benefits which is why they were used in this project. The hypothesis of this project is that black walnuts have oils/lipids with some antibacterial properties to fight off bacteria. The black walnut's exocarp and walnuts were ground down and mixed with methanol, butanol, hexanes, toluene, and normal saline in test tubes. Those mixtures were tested for antibacterial properties against the bacteria: Bacillus subtilis, Streptococcus mutans, Staphylococcus epidermidis, and Escherichia coli to see if zones of inhibition would be produced. Sterile technique was used to place filter paper disks onto bacterial cultures from each solvent/walnut extract. Cultures were incubated for observation and measuring of zones of inhibition. Bacterial cultures showed that the walnut extract's produced measurable zones of inhibition on some samples. Extract form the nut produced the most zones on S. epidermidis from each solution. During the different experiments, the hypothesis was proven to be correct, with the zones of inhibition showing walnuts had some antibiotic properties. The walnut extracts revealed different layers when centrifuged, lipid/fat test strips showed that the middle layer contained lipids/fats with hexane extract, toluene extract, methanol extract and BAW solutions having the most fats or oils present. Further testing will be needed to identify the different compounds found in the black walnut and experimentation with each to verify black walnuts antibiotic properties.

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