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Screening food plants for antibacterial activity to guide future testing of antibiotic synergy.

In an age of antibiotic resistance, antibiotic synergy with commercial food products has the potential to enhance antibiotics effectiveness. The synergy between plants and antibiotics was viewed in a Fall 2025 teaching lab, where turmeric and streptomycin functioned synergistically to create a larger zone of inhibition against *Bacillus subtilis*. The objective of this study began to replicate the synergy we observed in a more controlled setting and expand to screening other potential antimicrobial plants. We have obtained a variety of commercial powdered/ground plants, which will be screened for antibacterial effects against *Bacillus subtilis*, *Staphylococcus aureus*, and *Escherichia coli*. These represent Gram positive and negative bacteria, two common human pathogens, and a species capable of endospore formation. Plant products were purchased from a reputable online vendor. Ginger, garlic, and turmeric were chosen due to their growth within soil where competition with bacteria is common. Cinnamon oil has previously been shown to be highly effective against bacteria in our laboratory and, as a bark, naturally participates in plant defense. Black peppercorn and cayenne were selected for alkaloid content, and cloves for phenolic acid, which are types of plant defenses noted for microbial inhibition. All of the selected plants are common homeopathic remedies. In the future, we plan to screen effective plant/bacterial compounds with a variety of common antibiotics to assess for any synergistic effects.