CALIFORNIA STATE SCIENCE FAIR
2002 PROJECT SUMMARY

Name(s)
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Project Number
22237

Project Title
Garlic and Bacterial Inhibition

Abstract

Objectives/Goals
The objective of my project is to determine if garlic (Allium sativum) inhibits bacteria such as Bacillus subtilis, and, if so, how does its effectiveness compare to pharmaceutical antibiotics and disinfectants.

Methods/Materials
I prepared 30 nutrient agar petri dishes and divided them into six groups of five dishes. I seeded each petri dish with a broth of Bacillus subtilis. I then placed sterile paper discs in each petri dish. In the fir„ group, I placed three discs which contained penicillin. Streptomycin discs went into group two, tetracycline discs in group three, glutaraldehyde discs in group four, phenol (5%) alcohol discs in group five, and raw garlic saturated discs in group six. I incubated all the petri dishes for 48 hours and calculated the percentages of the zones of bacterial inhibition.

Results
I determined that streptomycin was the most effective agent to inhibit the growth of Bacillus subtilis, followed by tetracycline. Garlic was actually more effective than penicillin. Glutaraldehyde was less effective followed by phenole alcohol.

Conclusions/Discussion
People who believe in natural medicine say that garlic is very important to human health because it protects the immune system from bacteria. Because my Mom eats lots of garlic and never gets sick, I wanted to do an experiment to see if garlic was a factor in her health. I went to the Biomedical Library at the University of California at San Diego and discovered that in 1858, Louis Pasteur experimented with garlic and concluded that it had antibacterial properties. My experiment showed that garlic was effective against Bacillus subtilis, compared to pharmaceutical antibiotics and disinfectants.

Summary Statement
My experiment determined that garlic inhibits the growth of Bacillus subtilis compared to pharmaceutical antibiotics and disinfectants.

Help Received
My mother's health and love of garlic inspired my project. My father helped me with my experiment and took digitial photographs of the results. James Dunford, M.D., gave me advice on how to measure zones of bacterial inhibition.and