



**CALIFORNIA STATE SCIENCE FAIR
2002 PROJECT SUMMARY**

Name(s) Emily A. Koch	Project Number J1321
Project Title Garlic and Bacterial Inhibition	
Objectives/Goals The objective of my project is to determine if garlic (<i>Allium sativum</i>) inhibits bacteria such as <i>Bacillus subtilis</i> , and, if so, how does its effectiveness compare to pharmaceutical antibiotics and disinfectants.	
Abstract 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 <i>Bacillus subtilis</i> . I then placed sterile paper discs in each petri dish. In the first 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 <i>Bacillus subtilis</i> , 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 <i>Bacillus subtilis</i> , compared to pharmaceutical antibiotics and disinfectants.	
Summary Statement My experiment determined that garlic inhibits the growth of <i>Bacillus subtilis</i> 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 digital photographs of the results. James Dunford, M.D., gave me advice on how to measure zones of bacterial inhibition.and	