



**CALIFORNIA STATE SCIENCE FAIR
2008 PROJECT SUMMARY**

Name(s) Alana Torres	Project Number J1827
Project Title Garlic, Spider Plant, and Noni Fruit: Possible Antibiotic Substitutes	
Abstract Objectives/Goals Objectives/Goals: My project tested three plant products: noni juice, spider plant root, and garlic for their ability to inhibit bacterial growth. Noni juice is currently a \$2 billion dollar industry, but many of its medicinal claims haven't been scientifically tested. Methods/Materials Methods/Materials: My experiment involved two trials and a total of 57 plates. In Trial one, I prepared agar plates by mixing extract from noni juice, garlic, spider plant root with LB (Luria Bertania) nutrient media. I made plates containing ampicillin(the positive control) and sterile water (the negative control). I then inoculated the plates with a harmless strain of E. coli(E. coli DH5 -T1R).The plates were incubated at 37 degrees C for 16 hours. The plates were then examined, and I performed a colony count. Results Results: The average colony counts were as follows: sterile water control - 400; garlic - 344; spider plant - 504; noni - 0; ampicillin - 0. A second trial was performed using plates made with LB nutrient agar and noni juice mixed to the following concentrations: 12%, 6%, 3%, 1.5%. The growth of E coli on these plates was compared to the positive control(ampicillin) and the negative (sterile water). The colony counts were as follows: sterile water control - 444; noni 12% - 0; noni 6% - 504; noni 3% - 492; noni 1.5% - 696; ampicillin - 0). Conclusions/Discussion Conclusions/Discussion: According to the results, the garlic extract and spider plant extract at the test concentrations were unable to significantly inhibit the growth of E. coli. However, this study did demonstrate that noni juice at a concentration of at least 12% completely inhibits the growth of E. coli on nutrient agar plates. This study does not necessarily prove that noni juice can successfully treat bacterial infections in humans, but clinical trials using noni might prove interesting.	
Summary Statement This experiment examines the effectiveness of garlic extract, spider root extract, and noni fruit as antibacterial agents in comparison with ampicillin.	
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