



**CALIFORNIA STATE SCIENCE FAIR
2013 PROJECT SUMMARY**

Name(s) Aspen S. Reed	Project Number J1611
Project Title Investigating Effects of Cajun Spices	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals I like Cajun style fish and chicken. I read an article that said there could be antibacterial effects from Cajun spices, but the findings were still controversial. I decided to investigate and try to find an answer. Based on my research, I believed that the Cajun Spices would have antibacterial effects because of the many different spices in the ingredients., I believed that Red Cayenne Pepper, Black Pepper, and Oregano would have antibacterial effects because they contain carvacrol. In some recent studies, carvacrol was the strongest antibacterial agent found in spices. I believed thyme would be antibacterial because it contains both thymol and carvacrol.</p> <p>Methods/Materials I repeated my procedures in three separate trials. I used a total of 74 plates of Coliscan Easygel. This media could identify coliform bacteria and E. coli. I tested eight spices multiple times with replicates. The spices I tested were Cajun Spice, Garlic, Onion, Salt, Oregano, Thyme, Black Pepper/Peppercorns, and Red Cayenne Pepper. I also plated positive controls and negative controls. I plated serial dilutions of 1/10 and 1/100 for the creek water, which was my source of bacterial contamination. In each plate, I placed 0.10 gram of each test spice, which I measured to the nearest 0.01 of a gram on a digital scale. I analyzed each plate individually and photographed the plates.</p> <p>Results Surprisingly, many of the spices I tested appeared to have no inhibitory effects on microbial growth. Bacteria and molds often grew directly on the spices in the plates. However, I found that garlic and onion both appeared to moderately inhibit the growth of coliforms. No large coliform colonies grew in any of the garlic or onion test plates. In the garlic plates no E.coli or molds were observed. Few noncoliform colonies grew in the garlic plates. Garlic was the most effective spice in inhibiting microbial growth. No E. coli was observed in the onion plates, but numerous molds grew in the onion test plates. No E. coli was seen in the black pepper plates, Cajun spice seemed to moderately inhibit non-coliforms and molds.</p> <p>Conclusions/Discussion It may be that the antimicrobial compounds in the spices which are fat soluble are extracted and become more active in foods, but in this water challenge, no zones of inhibition were observed in the growth media.</p>	
Summary Statement The purpose of this project was to investigate the antibacterial properties of Cajun Spices	
Help Received I would like to thank my mother for driving me to the creek to obtain water samples. I would also like to thank my science teacher for supplying me with some of the materials needed for the experiment, teaching me sterile procedures, and providing a lab in which to perform my procedures.	