



**CALIFORNIA STATE SCIENCE FAIR
2015 PROJECT SUMMARY**

Name(s) Fatimah S. Bari	Project Number J1503
Project Title Natural Herbs vs. Synthetic Antibiotics	
Abstract Objectives/Goals We use herbs like cardamom, turmeric, chili, cumin, and garlic in our daily cuisine. Ancient folks have frequently used these natural herbs for treatment. I was curious if these herbs really have any medicinal and antibiotic properties. In my last year science project I compared to see if natural herbs can kill bacteria additionally which one of these herbs can treat bacteria the best. My project proved that herbs kill bacteria. Cardamom and Turmeric powder were the best. This year my objective was to see if natural herbs act as better antibiotics than the synthetic antibiotics. Methods/Materials Prepared Agar dishes and swabbed them with Q-tips soiled from the kitchen floor. We let the bacteria grow in the dishes for one week. Counted the bacteria before applying herb or synthetic antibiotic. Examined each dish after 24, 48, 72 and 96 hours and counted the bacteria with the help of Bacteria Counter. Prepared samples of the 500 mg each synthetic antibiotics and the herb using saline solution. Poured 15 ml each Amoxicillin, Cephalexin, Turmeric and Cardamom solutions onto one each dish and kept one as control. Placed the dishes in the incubator at 98 degrees F Results Before adding antibiotics or herbs, the bacteria count was, control dish 410, Amoxicillin dish 362, Cephalexin dish 508, Cardamom dish 327, and Turmeric dish had 318. 24 hours after adding the antibiotics and herbs solutions into their respective dishes, Control had 425, Amoxicillin had 362, Cephalexin had 496, Cardamom had 325 and Turmeric had 318 bacteria count. After 48 hours result was Control 460, Amoxicillin 350, Cephalexin 475, Cardamom 312, and Turmeric 309. After 72 hours Control 465, Amoxicillin 325, Cephalexin 436, Cardamom 292 and Turmeric 301. After 96 hours Control dish was 465, Amoxicillin 296, Cephalexin 420, Cardamom 290 and Turmeric 295. Conclusions/Discussion After discussion with my advisor, I have concluded that my hypothesis is inconclusive. This is based on less than 20% (within lab error tolerance) of total bacteria killed. One interesting phenomena was noted, that the control dish, had a continual growth of bacteria throughout the experiment. The dishes that were treated with antibiotics or even herbs had a minimal reduction of bacteria however, no growth. As doctors prescribe to complete the treatment. I believe, if I would have applied more doses at prescribed times, the bacteria would have been killed completely.	
Summary Statement Natural herbs like Cardamom and Turmeric Powder have anti-bacterial and medicinal value as good if not better than synthetic anti-biotic as Amoxicillin and Cephalexin.	
Help Received I am thankful to my Science Teacher Mrs. Boyd for guidance and Apple Valley High School Science teacher Mr. Elmer who let me use his laboratory. My elder brother and dad helped me preparing my science board.	