



**CALIFORNIA STATE SCIENCE FAIR
2015 PROJECT SUMMARY**

Name(s) Jenna E. Beausang	Project Number J1602
Project Title Natural Born Killers: Essential Oils as Inhibitors of Bacterial Growth	
Abstract Objectives/Goals To determine which essential oil (oregano, eucalyptus, or tea tree oil) was most effective in killing or inhibiting the growth of E. coli bacteria. To find out if essential oils are good alternatives to harsh prescription medicines to treat infections. Methods/Materials Identical agar solutions were prepared in three Petri dishes. E. coli bacteria from a science store was spread in a #lawn# pattern on all dishes and allowed to develop. Once colonies developed, they were measured with calipers and growth was logged. Next, three drops of essential oil were placed on half the colony in each dish (1-oregano oil, 2-eucalyptus oil, 3-tea tree oil). One-half of the bacterial colony in each dish was kept clear of oil to act as a control to see if the oil stopped growth on the other half of the colony. After two days, colonies were re-measured to determine if the oils were effective in stopping the growth of or killing the bacteria. Results Of the three oils, oregano was the most effective at stopping the growth of the E. coli bacteria. The surface area of the E. coli bacteria in the Petri dish with oregano oil was smaller than the that of the bacteria in the dishes with the other oils. Conclusions/Discussion The experiment proved my hypothesis: of the three essential oils (oregano, eucalyptus and tea tree), oregano is the most effective in stopping the growth of or killing E. coli bacteria. Essential oils made from plants contain phenols, which have antibiotic and anti-inflammatory properties. The main phenol in oregano oil is carvacrol, which has been proven to be one of the most effective antibiotics known to science. Hopefully in the future, natural methods, such as essential oils, can be used to treat illnesses instead of harsh prescription medicines. This experiment meant a lot to me, since I have Crohn's Disease and I take strong medications to fight infections. The prescription medications makes me feel bad, so I want to find natural alternatives. I hope more experiments can show that essential oils can help kids fighting illness. Then they wouldn't have to use prescription medications that make them even sicker than they already are.	
Summary Statement My experiment tried to determine which essential oil (between oregano, eucalyptus, and tea tree oil) was most effective at killing or inhibiting the growth of E. coli bacteria	
Help Received My parents purchased the materials. My Science teacher helped me decide how to perform my experiment. Local high school students helped prepare me for interviews.	