



**CALIFORNIA STATE SCIENCE FAIR
2003 PROJECT SUMMARY**

Name(s) Thallia R. Bird	Project Number S1302
Project Title Essential Killers	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals My objective is to find how effective essential oils are at killing e.coli bacteria. I used dilutions of five different essential oils to test the effectiveness of essential oils. I will continue to dilute until the dilutions stop killing the e.coli bacteria.</p> <p>Methods/Materials I spread e.coli bacteria in a solution of beef broth onto sterile sheep's blood agar petri plates. I diluted the 100% pure essential oil with distilled water. I used dilutions 1:1, 1:2, 1:4, and 1:6. I placed drops of the dilutions on the inoculated petri plate and the incubated the petri plates at thirty-seven degrees centigrade or body temperature.</p> <p>Results Essential oils killed e.coli bacteria in all dilutions. Clove essential oil 1:4 dilution killed the best of all five essential oils I tested. Undiluted pine essential oil killed almost as well as the clove dilution. Mountain savory essential oil killed much less than the pine essential oil in all dilutions, but it killed a little more than the marjoran essential oil in all dilutions. Lemon essential oil hardly killed any bacteria at all.</p> <p>Conclusions/Discussion Essential oils are effective at killing bacteria but with varying levels of effectiveness. To be more accurate, I would need more definitive colonies to count the colonies of bacteria. The zones of inhibition are very large in these dilutions. I have a experiment in progress using smaller dilutions.</p>	
Summary Statement Discovering how effective essential oils are at killing bacteria.	
Help Received Mom took a few pictures. Judy Ferelman helped me to get petri plates. Science teacher suggested using dilutions.	