



**CALIFORNIA STATE SCIENCE FAIR  
2011 PROJECT SUMMARY**

<b>Name(s)</b> <b>Yusuf A. Khan</b>	<b>Project Number</b> <b>J1604</b>
<b>Project Title</b> <b>Honey I Shrunk the Bacteria</b>	
<b>Abstract</b> <b>Objectives/Goals</b> I am trying to find out which organic natural remedy (honey, olive oil or garlic) will kill Staphylococcus epidermidis and help sanitize the skin from any infections. <b>Methods/Materials</b> Built incubator Bought agar plates and ordered bacteria online Prepared bacterial solution by pouring Mueller's broth into tube of Staphylococcus epidermidis Used a sterile calibration loop to streak 1 micro-liter of the solution onto each agar plate. A new loop was used for each plate, and once used, discarded immediately after Put the plates into a pre-made incubator Counted and recorded the number of bacteria after 24 and 48 hours After 48 hours, I drew up 0.2 cc of honey, garlic paste/juice, and olive oil into 3 sterile syringes Added each remedy onto a separate agar plate and left it for 24 hours Counted and recorded the number of remaining bacteria after 24 hours  Materials: Incubator, Styrofoam box, Lamp, Thermometer, Honey, Garlic, Olive oil, Agar Plates, Mueller's broth, Inoculation Loops, Sterile Syringes and gloves, Staphylococcus epidermidis. <b>Results</b> I observed that each natural remedy killed a certain amount of bacteria but some were better than others. Honey was the best natural remedy. In the first trial, the natural agents killed more bacteria than in the second trial. Lastly, in the second trial, I had little bacterial growth so I had to find a way to measure the amount of growth. That is why I used a relative scale instead of absolute numbers. <b>Conclusions/Discussion</b> I had hypothesized that honey would be the most antibacterial. By performing this project, I proved my hypothesis to be correct. In both trials, honey killed the most amounts of Staphylococcus epidermidis. I realized that although natural remedies are great at killing bacteria, pharmaceutical substances are better geared for the killing of bacteria because they are more specific. For example, each pharmaceutical product targets a specific structure of bacteria, some target the wall while others attack the DNA and growth cycle.	
<b>Summary Statement</b> In my project I was trying to determine which natural remedy (honey, garlic, olive oil) was most effective in preventing/treating skin infections.	
<b>Help Received</b> Mother ordered materials; Father helped oversee project and edited report; Dr.Nabeela Patel provided project guidance	