



**CALIFORNIA STATE SCIENCE FAIR
2011 PROJECT SUMMARY**

Name(s) <p align="center">Jessica L. Cao</p>	Project Number <p align="right">31484</p>
Project Title <p align="center">Beat Blemishes for a Bargain</p>	
<p align="center">Abstract</p> <p>Objectives/Goals The objective of this experiment was to identify (a) how Neutrogena, Clean & Clear, baking soda, toothpaste, apple cider vinegar, salt water, and Neosporin would affect the proliferation of E. coli and (b) which of these treatments would inhibit bacterial proliferation the most, thus indicating its effectiveness in treating acne. My hypothesis was that all of the treatments would inhibit the bacterial growth with Neosporin as the most effective, followed by other bactericidal medications, and then those that are bacteriostatic.</p> <p>Methods/Materials Two nutrient agar plates were divided into four sections labeled Water, A, B1, C1, D1, E1, F1, and G1. The letters correspond with the medication, while the numbers correspond with the trial. Sterile cu-tips were used to transfer liquid E. coli culture onto each of the plates. A sterile disk was then soaked in distilled water as a control and placed onto the corresponding section of the plate using sterile forceps. The process was then repeated with each of the seven medications, resulting in each lettered section containing one disk that has been soaked in corresponding medication. The complete sequence was repeated for trials two through five. All ten plates were inverted and incubated at 37°C. After 48 hours, the diameters of the zones of inhibition (areas of no bacterial growth surrounding the medication disks) were measured and recorded.</p> <p>Results Upon collecting the data, there were no zones of inhibition around the disks treated with water, Neutrogena On-The-Spot Vanishing Cream, and salt water. The zones of inhibition averaged (in diameter), 9.6 mm around disks treated with Clean & Clear, 19.2 mm around disks treated with baking soda, 16.4 mm around disks treated with toothpaste, 28.6 mm around disks treated with Apple Cider Vinegar, and 16.8 mm around disks treated with Neosporin.</p> <p>Conclusions/Discussion The data collected mostly refuted my hypothesis that all treatments would have an effect on the bacterial proliferation with Neosporin exhibiting the most inhibition. Two treatments, the Neutrogena On-The-Spot Acne Cream and salt water that did not have any effect on the growth and Apple Cider Vinegar exhibited the most inhibition followed by baking soda, then the Neosporin, toothpaste, and Clean & Clear. My experiment shows that cheaper and simpler home remedies can be more effective than expensive commercial acne treatment products.</p>	
Summary Statement In this experiment, I investigated the effectiveness of a myriad of acne spot treatments, ranging from commercial products to home remedies by measuring how well they inhibit bacterial proliferation.	
Help Received My parents helped me buy all of the supplies. My dad helped me construct an incubator and boil the supplies to sterilize them. Dr. Gott, an infections control doctor helped me better understand the concept of how proliferation is inhibited.	