CALIFORNIA STATE SCIENCE FAIR
2002 PROJECT SUMMARY

Name(s)
Caitlin R.S. Merrill

Project Number
22868

Project Title
Mascara Malady: What Are You Really Doing to Your Eyes?

Abstract

Objectives/Goals
The object of my project was to determine how three different types of mascara affected the growth of the bacterium Staphylococcus epidermidis, and in what way. I took quantitative and qualitative tests to achieve this goal.

Methods/Materials
My project was very fun to perform. To begin, I went and bought my mascaras, alcohol, hypoallergenic, and waterproof. After that, I began my qualitative tests. I made agar from a powder. I then sterilized it and poured it into plates. After that, I made nutrient broth for bacteria. Once it dissolved it, I sterilized it too. I then mixed in my bacteria Staphylococcus epidermidis and let it incubate for one day. The next day, I prepared sterile circles of paper. I coated some of them with the three types of mascara. I then placed the dots with mascara four to a plate with three plates for each type, made three plates with dots with no mascara for a control, and made three plates with no dots. After that, I took a bacteria loop and made rings with the bacteria mixture around the dots, and around the empty space on my plain control plates with no dots. The next day, I checked for growth by drawing the bacteria rings. In total, I drew on day 1, day 2, day 3, day 8, and day 10.

Then, I performed quantitative tests. I put 4 ml of nutrient broth in each of four test tubes. I then took 4 ml of bacteria and released 1 ml into each test tube. Following that, I took a measured amount of each mascara, and placed it in three of the four test tubes. The fourth one was my control. These were then incubated over night, and the following day I took the tests. I placed the control in the Spec. 20 and set it at 100%. A Spec. 20 is a machine which measures how much light passes through the contents of a test tube. It then measured the amount of light passing through each test tube, affected by the bacteria growth. I took this test four times and my experiment was done.

Results
Analyzing these results, it appears that alcohol and hypoallergenic had the most mold spores developing. What I found interesting is that by the end of the ten day period, 9 out of 12 of the dots on my control with paper had rings of bacteria in contact with them.

Conclusions/Discussion
Out of the three mascaras, it appeared that hypoallergenic had the most bacteria growth, alcohol the second most, and the waterproof mascara the least amount of bacteria growth.

Summary Statement
In my project, I determined how different mascaras affected the growth of Staphylococcus epidermidis.

Help Received
My teacher, Mr. Susman, provided lab and equipment.