CALIFORNIA STATE SCIENCE FAIR
2006 PROJECT SUMMARY

Name(s)
Mario A. Magana

Project Number
S1311

Project Title
Cleaning Water Via Silver

Abstract

Objectives/Goals

Complete Abstract:
I, like many people, consider anti-bacterial agents (i.e. hand sanitizers, anti-bacterial soaps Lysol, Clorox, etc.) as a very crucial part of our lives. Because one of the goals in my life is to search for the best way to maintain myself as much as I can away from germs, I always had bacteria in mind when science-project-topic-picking came. The way I arrived to my question: Does silver affect bacteria? was via research online and with Mr. Callaway#s knowledge of an old theory. He had heard that during the cowboy times, the travelers would put a silver coin into a barrel of water to clean or rid it of bacteria, with this in mind and some further research; I found more and much more modern uses of silver as an anti-bacterial agent.

There was no way of performing such an experiment without a bacteria source, so overcoming a great deal of my misophobia played a big part. To my advantage, three other of my peers were involved in a microbiology topic, and specifically bacteria. With this in mind, I was able to use a nutrient broth which was made with mouth-bacteria collected from a peer and put into a container with broth and sugar. After a weekend, this was our bacteria source. For silver, Mr. Callaway was nice enough to lend me several silver dollars (coins were sterilized with alcohol and placed over a flame). With three small cups, I put two coins in each and 1ml of bacteria in the 1st one, 5ml in the 2nd, and 10ml in the 3rd. For my control, I placed two coins in one cup with no bacteria. Our unfortunate luck took action when we discovered that the Petri dishes we had prepared with the agar (which was autoclaved beforehand) were apparently faulty and not sterilized like the package they came in claimed. This forced us to reduce our sample sizes to half of what we had started with. After finding new, glass Petri dishes, autoclaving, and adding the agar, I was ready to use a sterilized pipette to drop one drop (1/20 of a bacteria ml) of each solution in the cups into each dish. After a weekend, I was very pleased to find that silver had an immense impact on the bacteria-colony count. The comparison of my control group results (just bacteria in a Petri dish) and the dishes with the silver coins is amazingly significant, due to the Standard Deviation calculations I performed.

Summary Statement

My project tests Silver's properties and their affect on bacteria.

Help Received

My science teacher, Mr. Callaway, assisted/supervised my experimenting in his lab.