



CALIFORNIA STATE SCIENCE FAIR 2014 PROJECT SUMMARY

Name(s) Michelle K. Hibbs	Project Number 34743
Project Title Closing the Cap? Resisting Your Meds?	
Objectives/Goals In this experiment the objective was to see if the bacteria Staphylococcus Aureus would become resistant to the antibiotic penicillin after being exposed to the antibiotic three times.	Abstract In this experiment the objective was to see if the bacteria Staphylococcus Aureus would become resistant to the antibiotic penicillin after being exposed to the antibiotic three times.
Methods/Materials I started by taking a sterile swab and rubbing it onto the Staphylococcus culture tube. I rubbed the swab onto the agar in a triangle pattern. I boiled 200 ml of water and one penicillin pill which I stirred and formed a liquid. Using a hole punch and a coffee filter I created a disk filter. I dipped the disk filter into the solution for 30 seconds and placed the soaked disk filter in the middle of the triangle. I placed the Petri dish in an incubator for 72 hours. After used a caliper to measure the zone of inhibition on each side of the triangle by measuring the distance from the closest bacteria colony to the filter disk. I repeated these steps 19 times. Using a sterile swab I swabbed the closest bacteria colony of the bacteria that has been exposed to penicillin once. I took the swab with the bacteria exposed to penicillin and rubbed it onto the Petri dish. I repeated the steps starting with boiling 200 ml of water and one pill of penicillin. I repeated steps starting from swabbing the bacteria colony has been exposed to the penicillin once 19 times. I took a Petri dish and a sterile swab and swabbed the closest bacteria colony that has been exposed to penicillin twice. I repeated the steps starting with boiling 200 ml of water and one penicillin pill and stirring to make a solution and ending with using a caliper to measure the zone of inhibition on each side of the triangle and recording data. I repeated those steps 19 more times.	
Results For my experiment I collected 20 pieces of data for each time I exposed the Staphylococcus to the penicillin. The average zone of inhibition for the staphylococcus exposed to penicillin once was 7.97 mm. The average zone of inhibition for staphylococcus exposed to penicillin twice was 7.45 mm. The average zone of inhibition went down dramatically after the staphylococcus was exposed to penicillin three times with an average zone of inhibition of 2.28 mm. In most trials there was no zone of inhibition, the bacteria had taken over the filter disk of penicillin.	
Conclusions/Discussion The data supported my hypothesis. In the medical world many antibiotics are over prescribe or prescribed when not needed. When this occurs, a stronger or resistant bacteria might develop.	
Summary Statement My project is on antibiotic resistance, Staphylococcus Aureus vs. penicillin.	
Help Received Ms Fisher (Teacher) provided lab facilities, parents helped with money to make a presentation board.	