



CALIFORNIA STATE SCIENCE FAIR 2010 PROJECT SUMMARY

Name(s) Austin K. Ha	Project Number J1715
Project Title Are You Anti-Antibiotic?	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals The objective of this experiment was to find what types of antibiotics E. coli, bacteria commonly found in raw or undercooked meat and produces, can grow resistant to. My hypothesis was that the E. coli could grow resistant to Penicillin and Erythromycin, but could not grow resistant to Ampicillin, Amoxicillin, and Kanamycin.</p> <p>Methods/Materials A mixture of distilled water and agar powder was boiled, then poured into Petri dishes to form the living surface for the bacteria. Sterile swabs were used to transfer E. coli from a tube slant onto the agar in the Petri dishes. A penicillin dish was placed one in each of 16 dishes. The same went for Ampicillin, Amoxicillin, Erythromycin, and Kanamycin. The dishes were incubated and the growth of the bacteria was measured and recorded every other day for 21 days.</p> <p>Results In the resulting averages, E. coli from inside the dishes containing Penicillin, Ampicillin, and Amoxicillin was able to grow resistant (within 5 mm of) to the antibiotic. The bacteria was able to grow as close as 1.9375 mm to the Penicillin discs, as close as 2.0625 to the Ampicillin discs, and as close as 2.125 mm to the Amoxicillin discs. In contrast, the E. coli was only able to grow up to 9.5 mm to the Erythromycin discs and only up to 10.125 mm to the Kanamycin discs.</p> <p>Conclusions/Discussion The main hypothesis was that the E. coli could grow resistant to Penicillin and Erythromycin, but could not grow resistant to Ampicillin, Amoxicillin, and Kanamycin. The bacteria was able to grow resistant to Penicillin, Ampicillin, and Amoxicillin, but not able to grow resistant to Erythromycin and Kanamycin, refuting most of my hypothesis. My experiment shows how dangerous E. coli can be to humans and animals since it can grow resistant to different types of antibiotics, and also how antibiotic resistance can become dangerous.</p>	
Summary Statement In my project, I tested whether or not E. coli would be able to grow resistant to different types of antibiotics, including gram negative, gram positive, and broad spectrum antibiotics.	
Help Received Father helped me to buy all of my supplies, to create an incubator for the bacteria to live in, and to properly dispose of the Petri dishes; Mother helped me boil and prepare all of the agar plates; my science teacher and advisor, Ms. Fisher, helped in all aspects of my project and guided me throughout the project.	