



# CALIFORNIA STATE SCIENCE FAIR 2003 PROJECT SUMMARY

<b>Name(s)</b> Catherine K. Yaw	<b>Project Number</b> <b>J1336</b>
<b>Project Title</b> <b>Are You Eating Bacteria?</b>	
<p style="text-align: center;"><b>Abstract</b></p> <p><b>Objectives/Goals</b> My purpose is to do a comparative study of bacterial counts on hamburger patties sold at 5 different fast-food restaurants. I was curious about whether the hamburger was contaminated with any harmful microorganisms such as E. coli.</p> <p><b>Methods/Materials</b> My procedures took was 4 days. On the first day, I went to Westmont College to use their biology lab to make sterile petri dishes of MacConkey and Plate Count agar media. The next day, my parents bought the condiment-free burgers from 5 fast food restaurants. At the lab, I cut 1 gram of each hamburger patty into small pieces. Then I homogenized the hamburger meat and 9 ml of a sodium chloride to make a juice. From there, I made a 10 fold dilution. I took 0.1 ml of the direct burger juice and the 10 fold dilution onto 1 MacConkey and 1 Plate Count Agar plate for each of the burgers. After completing all the plates for all the burger samples, I placed the plates into a 37 degree C incubator for 24 hours. I also did a Gram Stain Test for the two plates that had bacterial growth. This allowed me to identify that the bacterium was a gram positive bacillus. I could not do further testing because the testing would take too long and too expensive to perform tests to find the exact bacterium.</p> <p><b>Results</b> Sample E had 1110 colony forming units per gram of meat in the undiluted Plate Count Agar sample and 1600 cfu in the 10 fold dilution sample of PCA. All the burger samples grown on the MacConkey Agar showed no signs of bacterial growth. There was no presence of E. coli or Salmonella in the hamburger patties.</p> <p><b>Conclusions/Discussion</b> It seems that the burgers from the restaurants that I tested are safe. There was no bacterial growth in the MacConkey Agar. However, the employees of the restaurant may contaminate the hamburger if they are sick or unhygienic when preparing the burgers. If I were to do my project over again, I would also test a raw hamburger patty along with the cooked hamburger patties from the various fast food restaurants.</p>	
<b>Summary Statement</b> Detection of any bacterial contamination in hamburger patties from fast food restaurants.	
<b>Help Received</b> Parents helped put together board and provided transportation to University labs; Used labs at Westmont college and Cal Lutheran University unnder the supervision of Professor Frank Percival and Professor Barbara Collins	