



CALIFORNIA SCIENCE & ENGINEERING FAIR 2018 PROJECT SUMMARY

Name(s) Aarya Mukherjee	Project Number 38610
Project Title Microbes on Meats	
Abstract Objectives/Goals To understand the types of bacteria humans are exposed to through consumption of meat purchased from grocery stores Methods/Materials Organic and non-organic chicken meat from 3 grocery stores and water as control was cultured using Tryptic Soy Broth (TSB) and Macconkey agar plates. Matrix assisted laser desorption ionization time of flight (MALDI-TOF) mass spectrometry was used for bacterial identification. Siemens Microscan for used for antibiotic sensitivity testing Results This study tested microbial presence on organic and non-organic chicken meat from 3 grocery stores. All samples had polymicrobial presence after 24 hrs of growth. There was no significant difference in number, type or amount of bacterial growth between organic and non-organic meat. Similarly, there was no difference in bacterial antibiotic resistance between organic and non-organic meat. Pre-packaged meat had less bacterial contamination than butcher meat. In addition, washing meat decreased bacterial growth. Most bacteria grown were non-pathogenic and are known environmental contaminants, but some bacteria found are known to cause infections in immunocompromised hosts. Conclusions/Discussion My study shows that all chicken meat samples from grocery stores had microbial presence. No significant difference in number of bacteria, degree of growth, type of bacteria or bacterial antibiotic resistance was noted between organic and non-organic meat. Bacteria were mostly environmental contaminants, but some potential pathogens were also found. Bacteria that FDA monitors- Salmonella, Campylobacter, E.coli were not found in the samples. These findings need to be confirmed by testing multiple samples. In my study, only one bacterium from each meat sample was tested for antibiotic resistance. Testing all pathogenic bacteria may alter findings on antibiotic resistance patterns.	
Summary Statement What types of bacteria are present on chicken meat from grocery stores, and are they influenced by antibiotics in chicken feed.	
Help Received Phong Pham, CLS, Sr. Supervisor, Microbiology Division, Zuckerberg San Francisco General Hospital was my mentor for the project. He guided me through the whole process. He helped me with inoculating plates, identifying bacteria, using the MALDI TOF machine and the Siemens MicroScan. My Mom,	