



**CALIFORNIA STATE SCIENCE FAIR
2010 PROJECT SUMMARY**

Name(s) Marissa A. Salinas	Project Number S1721
Project Title The Effects of Seasonings on the Control of Escherichia coli in Hamburger	
Objectives/Goals Part 1: How much E.coli is found in Hamburger? Part 2: Which spice affects E.coli the best?	
Abstract Methods/Materials I will be using EMB agar to test the E.coli. The reason I am using EMB is because it is known best for showing E.coli bacteria. In addition, I will also be using four different types of spices: Cinnamon, Garlic, Oregano, and Sage. One other item I will be using is five different meat sources. They vary from fast food chains, to top of the line meat stores, to little corner stores.	
Results Average of Non E.coli Coliform and E.coli in Hamburger Meat My results were that Meat from Store WM had the least bacteria growth and that Processed at X Slaughter House had the most bacteria growth. Average Number of Non E.coli Coliform and E.coli in Meats with Spices My results in this section showed me that Garlic, Oregano, and Sage had a really good positive effect towards the meats when compared to Cinnamon that did change the amount of bacteria but not as well as the others. Average Non E.coli Coliform and E.coli in Hamburger Meat Mixed With Cinnamon My results were that Meat From Store WM had the least amount of bacteria change even after the spices were added and Processes at x Slaughter House had the most amount of bacteria change when the spices were added. Average Non E.coli Coliform and E.coli in Hamburger Meat Mixed with Sage My results were that Meat From Store WM had the least amount of bacteria change even after the spices were added and Processes at x Slaughter House had the most amount of bacteria change when the spices were added. Average Non E.coli Coliform and E.coli in Hamburger Meat Mixed with Oregano My results were that Meat From Store WM had the least amount of bacteria change even after the spices were added and Meat From Store LC had the most amount of bacteria change when the spices were added. Average Non E.coli Coliform And E.coli in Hamburger Mixed with Garlic My results were that Meat from Store WM had the least amount of bacteria change even after the spices were added and Processes at x Slaughter House had the most amount of bacteria change when the spices	
Summary Statement My project is about finding how much E.coli is found in meat and what spice effects ti the best.	
Help Received mother helped cut papers and used lab equipment at Sanger High School	