



**CALIFORNIA STATE SCIENCE FAIR
2007 PROJECT SUMMARY**

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Project Title
Pre-Washed or Not? A Process to Eliminate E. coli 0157:H7

Abstract

Objectives/Goals
 #How many times should manufacturers wash their produce to remove E.Coli 0157:H7 if sold pre-washed?#My hypothesis was #If the average number of times(3) factories wash their vegetables does not sufficiently remove E.Coli 0157:H7,than increasing the number of times washed will remove the remaining E.Coli.#

Methods/Materials
 Tested on: Bok Choy,spinach,lettuce,celery leaves,radish leaves,beet leaves, flat parsley,basil,leek,and watercress. For each of the 10 vegetables tested, I used 10 leaves;thus 100 leaves.I created a scale for each,covering leaves with 100% ,75% ,50% ,and 25% contamination of Glo Germ. I covered 9/10 leaves with 100% contamintaion. The one without was left to see the percentage of cross contamination that occured.¼ teaspoon of Glo Germ for the smaller vegetables was used with 10 C of water and ½ teaspoon for the larger vegetables with 20 C of water.I put one vegetable type in water and took them out to examine.After 10 times of washing I stopped due to cross contamination.After each rinse,I gave each leaf a percentage # of E.Coli remaining and averaged it out to find the remaining after each wash.I touched the produce stem so I would not remove any contamination and wore gloves.While leaves were examined under UV light, the remainder were laid on foil. After each round, I changed the foil and gloves, never changing the water unless changing vegetables.

Results
 Produce types should be washed at different rates.Celery should be washed: 10 times for an average of .8% E.Coli remaining on 10 leaves.Bok Choy: 8 times for 3.8%.Spinach: 10 times for 11.3%.Beet leaves: 9 or 10 times for 4.6%. Basil: 9 times washing.Flat parsley: 10 times for 13.1%.Leek:4 times for 34%.Lettuce: 10 times, 3.3%.Radish leaves: 10 times 15.3%.Watercress:10 times for 4.7%.

Conclusions/Discussion
 I consider my experiment inconclusive because recording the amount of E.Coli remaining,I used the naked eye.However,Glo Germ mimics bacteria with a 98% physical accuracy.Glo Germ and large bacteria are 5 microns large.The scale created could not reflect each leaf exactly because each is physically different.My results drawn are essential for the protection of many lives.It makes visible the contamination left on vegetables and mimics the procedures companies use when selling pre-washed produce.It protects people from hemocolitis and hemolytic uremic syndrome caused by E.Coli and could have saved half-million lives over 10 years.

Summary Statement
 Discovering a procedure to sufficiently remove E.Coli 0157:H7 from pre-washed produce; thereby eliminating the possible deaths in America from E.Coli 0157:H7 contamination from our food supply.

Help Received
 Mother for driving me and purchasing all equipment...and BELIEVING in me!