

Max Popkin

*Organic vs. Conventional: The Effects of Pesticides and Vegetable Wash on Green Leaf Lettuce Bacterial Colonies*

Last year I tested if pesticides affect the level of bacteria on vegetables, however my experiment was inconclusive as I could not count the bacteria on my petri dishes. Building on last year's work, I tested if organically grown green lettuce contained more bacteria on the surface than conventionally grown lettuce. I also investigated if vegetable wash, or distilled water reduced the number of bacteria found. I hypothesized that conventionally grown lettuce would have fewer bacteria on the surface than the organic lettuce and that washing the lettuce with vegetable wash and/or distilled water would significantly reduce the amount of bacteria on the surface. I created tubes with 10 mL LB broth, swabbed all of the vegetables, washed several of them before swabbing and placed the used swabs in the tubes. After incubating for 24 hours, the mixture was serially diluted 1:10,000 times then reapplied on new dishes. After 24 hours of incubation, I found that unwashed organic lettuce had fewer bacteria on the surface than the conventionally grown lettuce (contradicting my hypothesis). I also concluded that washing the lettuce with vegetable wash and/or distilled water decreased the levels of bacteria from an average of 50 or so colonies to approximately 3 colonies; distilled water performed as well as vegetable wash in the tests. The vegetable wash and distilled water both significantly reduced the amount of bacteria on both the organic and conventionally grown lettuce (supporting my hypothesis). Therefore my hypothesis was partially confirmed.