CALIFORNIA STATE SCIENCE FAIR
2011 PROJECT SUMMARY

Name(s)

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Project Number

31205

Project Title

Packaged or Fresh? Determining if the Packaging Process Used on Fruit & Vegetables Causes Them to Collect More Bacteria

Abstract

Objectives/Goals

My objective is to determine whether or not the packaging process used on fruit and vegetables causes them to collect more bacteria.

Methods/Materials

I used packaged carrots, apples, lettuce, and watermelon to represent the packaged fruit and vegetables. The carrots and the apples are both bagged and commonly served at schools for lunch or packed by moms for lunch. The lettuce is commonly served at dinners by families, and the watermelon is often served at parties. My control was the fresh fruit and vegetables (carrots, apples, lettuce, and watermelon). I used the fresh fruit and vegetables to determine if the packaged fruit and vegetables do collect more bacteria during the packaging process. First, I added ten (10) milliliters of distilled water to the test tube labeled #sample#, then cut a two (2) centimeter slice off the fruit or vegetable and place it into the test tube. Then I performed a serial dilution to 1/1000 to dilute the bacteria. I used the pipette to place 1/10 milliliter of the dilution onto an agar plate. I did this for ten trials. Then I repeated this process in order to test all the other fruit and vegetables.

Results

The results of my investigation on whether or not the packaging process used on fruit and vegetables causes them to collect more bacteria indicates that the packaged products had less bacteria than the fresh, 75% of the time.

Fresh Carrots: Average Amount of Bacteria Colonies: 888.8
Packaged Carrots: Average Amount of Bacteria Colonies: 154.5
Fresh Apples: Average Amount of Bacteria Colonies: 1,096.6
Packaged Apples: Average Amount of Bacteria Colonies: 1,160
Fresh Lettuce: Average Amount of Bacteria Colonies: 23.4
Packaged Lettuce: Average Amount of Bacteria Colonies: 38.4
Fresh Watermelon: Average Amount of Bacteria Colonies: 12.9
Packaged Watermelon: Average Amount of Bacteria Colonies: 11.4

Conclusions/Discussion

In conclusion, fruit and vegetables that are packaged collect less bacteria colonies than fresh fruit and vegetables, unless you are dealing with lettuce, which is healthier to eat fresh. The reason for such a low amount of bacteria on the packaged carrots, apples, and watermelon, is probably the process of washing and peeling of the fruit and vegetables before they are packaged. In addition, fruit and vegetables that are

Summary Statement

Whether or not packaged fruit and vegetables collect more bacteria than fresh.

Help Received

Father helped test my experiment; Mother helped with my display and creativity; Nathan Whittington helped with experiment supplies & lab equipment.

Preliminary