CALIFORNIA STATE SCIENCE FAIR
2015 PROJECT SUMMARY

Name(s)

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Project Number

35519

Project Title

Effects of Temperature on Fruits and Vegetables Using a Vitamin C Titration

Abstract

Objectives/Goals

Every day people manipulate fruits and vegetables in their diets. They are either eaten fresh, frozen for later use, or heated in the cooking process. The vitamins and nutrients that these foods supply are essential for human development. This experiment was designed to find out whether extreme temperatures, after being either heated or frozen, affect the amount of vitamin C in fruits and vegetables.

Methods/Materials

This investigation was conducted using a titration technique to measure the amount of vitamin C in tomatoes, kiwis, sweet potatoes, and red bell peppers. The vitamin C levels of the fruits and vegetables were tested at room temperature, after heating, and after freezing. The main materials used in this experiment were iodine, a juicer, an oven, a freezer, tomatoes, kiwis, sweet potatoes, and red bell peppers.

Results

Data interpretation showed little to no difference in vitamin C levels after manipulation. However, the red bell pepper did follow the trend we expected to see. This trend showed that after heating there was a decrease in the levels of vitamin C compared to the room temperature level. After freezing there was also a decrease, but less so than heating.

Conclusions/Discussion

Reliability issues with the technique used could have compromised results. The pigmentation of the foods caused difficulty when collecting qualitative data. Overall, the project was able to show the flaws of the vitamin C titration technique. With the information gained it has allowed us to begin thinking of a new way to test for vitamin C in foods.

Summary Statement

The effect temperature has on the vitamin C levels in certain fruits and vegetables using a titration method.

Help Received

Friend's Grandmother lent us the juicer for experimenting.