CALIFORNIA STATE SCIENCE FAIR
2005 PROJECT SUMMARY

Name(s)
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Project Number
J0520

Project Title
What Factors Affect Vitamin C in Liquids?

Abstract

Objectives/Goals
To determine if the level of Vitamin C in juices is affected by conditions such as refrigeration, sunlight, microwaving or freshly squeezed.

Methods/Materials
I took one half cup of distilled water and put a Vitamin C tablet in it which was 125 milligrams. I split it into four cups and added a teaspoon of starch solution to each cup. Then I put iodine into each cup, counting the number of drops it took to turn a blue black color and calculated the average of the four. I did this same procedure with four juices, but before adding the iodine, I either refrigerated them, microwaved them, left them in the sun, or had them freshly squeezed. Using a mathematical formula I calculated the amount of Vitamin C in each liquid. Materials included: distilled water, Vitamin C tablets, iodine, an eyedropper, starch solution, freshly squeezed orange juice, store-bought orange juice, lemonade, cranberry juice, lemons and cranberries.

Results
The freshly squeezed orange juice left in the refrigerator for five days had the most Vitamin C in it overall. The freshly squeezed cranberry juice had the least amount of vitamin C in it overall. The condition which produced the most amount of Vitamin C in the store-bought orange juice and the lemonade was the microwaving for one minute.

Conclusions/Discussion
My hypothesis was that the freshly squeezed orange juice would have the most amount of Vitamin C in it. However, my data showed that the freshly squeezed orange juice that was refrigerated for five days had the most Vitamin C. It apears that evaporation occurs while refrigerating as well as microwaving. When the liquid evaporates there is a higher concentration of Vitamin C.

Summary Statement
I tested a variety of juices using the titration method to determine how various conditions affect the amount of Vitamin C in those liquids.

Help Received
My father took me to the market and the pharmacy to buy the materials; My mother helped in the kitchen with cleaning up.