CALIFORNIA STATE SCIENCE FAIR
2011 PROJECT SUMMARY

Name(s)
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Project Number
31191

Project Title
Orange You Glad for Vitamin C?

Abstract

Objectives/Goals
The objective of this project was to determine which type of orange juice had the greatest concentration of vitamin C utilizing the titration method to compare vitamin C concentration in four different types of juices.

Methods/Materials
Procedures - Crushed one 500mg vitamin C tablet and put it in a glass of 500ml of water. Stirred the tablet in the water until it dissolved. Put 20ml of the mixture in a separate glass with 4 fl oz of water. Added prepared starch solution. Used an eyedropper and slowly added drops of iodine until the mixture turned a dark blue color which meant the vitamin C and starch solution had reacted with the iodine. Recorded the number of drops it took for the reaction to occur and calculated the milligrams of Vitamin C per milliliter of water. This acted as the control. Then followed these same steps with each type of orange juice sample. Used the following ratio to figure out how much vitamin C was in the different juice samples:

Sample Concentration (variable) = Drops of iodine in Sample
Control Concentration (1 mg/ ml) Drops of iodine in Control (27.5 drops)

Results
The scientist ran eight trials for each type of orange juice and the vitamin C tablet. The number of iodine drops taken to titrate the solution was averaged and measured in milligrams of vitamin C per milliliter of water. The fresh squeezed orange juice had 0.7909 mg/ ml of vitamin C, concentrate orange juice had 0.4727 mg/ ml, carton orange juice had 0.436 mg/ ml, and the powder orange drink had 0.27 mg/ ml of vitamin C.

Conclusions/Discussion
The scientist found that fresh squeezed orange juice contained the greatest amount of vitamin C, followed by orange juice from frozen concentrate, then juice from a carton, and last was powder orange drink. My hypothesis was partially incorrect.

Summary Statement
This project tested which type of orange juice contained the greatest concentration of Vitamin C.

Help Received
Received assistance with understanding math computations from Michele Okihiro, PhD, Scipps Institute of Oceanography