CALIFORNIA STATE SCIENCE FAIR
2009 PROJECT SUMMARY

Name(s)
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Project Number
S2019

Project Title
Does the Percentage of Water Content Vary with the Variety of Orange?

Abstract

Objectives/Goals
The purpose of this project was to determine if the percentage of water in different varietes of oranges varied.

Methods/Materials
Materials: 1. Navel and Valencia oranges- Minnelo and Clementine Tangerines; 2. A kitchen knife; 3. Aluminum foil; 4. Weight scale (electronic for exact weight); 5. A clock or timer; 6. An oven; 7. Cookie tray; 8. Oven mittens; 9. pen and notepad.

Procedure: 1. Weigh the selected orange. 2. Cut the orange in very thin slices. 3. Place the slices on the aluminum foil and place in the oven to dry. 4. Weigh the dried orange slices once. 5. Calculate the total percent of water weight. 6. Repeat with all orange samples.

Results
In conducting the experiment a record was kept of the total weight of each orange before and after each test. Each orange was weighted individualy as well as the aluminum foil before and after drying. The dryed weight was subtracted from the intial orange weight. The initial weight of each orange was different. However, the final results showed that at the end of the experiment each variety of orange had about the same water content percentage. The average water weight for all oranges fell in the range of 75.5 % to 80.4%. Examination by variety showed that the average Navel orange percentage is 77.8%, the average Valencia orange is 78.6%, the average Minneola Tangerine is 75.5%, and the Clementine Tangerine is 80.4%.

Conclusions/Discussion
The purpose of the experiment was to determine and compare the percentage of water contained in different varieties of oranges. It was hypothesized that an orange would have about 60% water and that 40% of the orange would be none liquide material including the orange peel, pip, and pith. At the end of the experiment it was calculated that the total average amount of water in all orange varieties tested orange is about 78%. Although different from the value hypothesized, the calculated value is indeed close. Water is therefore more than half of the total weight of the orange. The percentage values did vary for the different varieties of oranges, although only slightly. In conducting the experiment on four different types of oranges and taking the average percentage of weight, it can be concluded that about 78% of any orange's mass is water.

Summary Statement
This project determined the average percentage of water in different varieties of oranges.

Help Received
Mom supplied the oranges; Mr.Usher supplied me with the electronic weight scale; teachers supported me and revised my project.