



CALIFORNIA STATE SCIENCE FAIR
2016 PROJECT SUMMARY

Name(s) Madeline K. Michaelson	Project Number 36439
Project Title Correlation between Vitamin C Levels and Expiration Dates	
Abstract Objectives/Goals The objective of this study is to determine if expiration dates play a role in vitamin C content in orange juice. Methods/Materials I am using iodine and a starch solution made up of baking soda and water to determine how much vitamin C is in the orange juice. I'm using a starch solution because when you mix 10 drops of the starch solution with the orange juice it helps the iodine to find and absorb the vitamin C. The iodine absorbs the vitamin C and when it is all absorbed the orange juice changes colors. I will be adding drops of iodine until all the of the orange juice is absorbed and its color goes from orange to brown. I will have one control group and that is the brand of orange juice I am using. Results After completing my investigation on if expiration date affects how much vitamin C is in orange juice, I found that my hypothesis for expiration date affecting how much vitamin C is in orange juice was correct. My hypothesis for expiration date affecting how much vitamin C is in orange juice stated that the 5 weeks will have the most vitamin C, the 2 ½ weeks expiration date will have the second most amount of vitamin C, the 1 ½ weeks will have the second least amount of vitamin C, and the expired one will have the least. When compared to the control group the expired orange juice had a lot less drops of iodine needed to absorb the vitamin C and the orange juice that was well away from expiring had more average drops as the control group. Conclusions/Discussion The orange juice samples that were further away from expiration dates had a higher concentration of vitamin C.	
Summary Statement The titration methods I did indicated that expiration dates did play a role in vitamin C content in orange juice. The more expired orange juice samples had less vitamin C content.	
Help Received Jewely Lickey, Science teacher at Sanger Academy Charter School provided lab equipment	