



**CALIFORNIA STATE SCIENCE FAIR
2008 PROJECT SUMMARY**

Name(s) John Michael G. Ferrer	Project Number J0403
Project Title Anti-Oxidized Apples: The Effects of Vitamin C on Oxidation in Apples	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals The objective of this project was to determine the effects of various levels of ascorbic acid (Vitamin C) on the oxidation in apples. The experiment observed the antioxidant's effectiveness at retarding both area of oxidation and intensity of oxidation.</p> <p>Methods/Materials 50 apple samples were observed during a 6 day period in this experiment. The samples were equally distributed among 5 variable levels: 0 mg of ascorbic acid, 250 mg, 500 mg, 750 mg, and 100 mg. Water and the appropriate level of antioxidant were mixed to form 5 solutions in which to contain the samples. The solutions were poured into specimen jars, where the samples were then placed. Data was taken over the next 5 days. Statistics collected were for area of oxidation (% of surface oxidized, measured via a 10x10/sq. in. transparency) and intensity of oxidation (color of affected area, measured with a color scale).</p> <p>Results The general trend appeared to be that the higher the potency of ascorbic acid in the solution, the less pronounced the effects of oxidation were, both in area and intensity. In "area" statistics, the final averages were: (with potency levels in ascending order) 0 mg yielded 100% surface area oxidized, 250 mg yields 89.5% oxidized, 500 mg yields 60 % oxidized, 750 mg yields 54.5% oxidized, and 1000 mg yields 28% oxidized. The same results appeared in "intensity" statistics, with 0 mg yielding a Level 4.4 color (referring to color scale) and the rest of the levels yielding a Level 2 color.</p> <p>Conclusions/Discussion The antioxidant worked both to delay the oxidation reaction as well as lessen its overall effect. Increasing levels of antioxidant caused decreasing oxidation effects. Based on these results, it can be concluded that the higher the level of antioxidants in a specimen, the more effective the retardation of oxidation.</p>	
Summary Statement This project observes the effects of various levels of ascorbic acid (Vitamin C) on retarding the oxidation in an apple.	
Help Received Mother and father helped obtain materials and assemble sections of display board. Parents also supervised experimentation when chemicals (ascorbic acid) were involved. Science teacher, Mrs. Chiang, helped provide ideas and feedback on certain aspects of the project before and during experimentation.	