



**CALIFORNIA STATE SCIENCE FAIR  
2003 PROJECT SUMMARY**

<b>Name(s)</b> Monica J. Hernandez	<b>Project Number</b> <b>J0508</b>
<b>Project Title</b> <b>Does the Amount of Natural Fruit Juice Affect the Amount of Vitamin C in Packaged Juice Drinks?</b>	
<p style="text-align: center;"><b>Abstract</b></p> <p><b>Objectives/Goals</b> To measure the amount of Vitamin C in packaged juices and to determine the relationship between the amount of natural fruit juice and Vit. C. My hypothesis is that the amount of natural fruit juice does affect the amount of Vit. C.</p> <p><b>Methods/Materials</b> Method: (1.) Prepare Starch solution from ½ tsp. cornstarch with 1 Tbsp. distilled water to form a paste. (2.) Prepare Standard Vit. C solution by crushing Vit. C tablet. Pour 125 ml. of distilled water into jar, adding crushed Vit. C. Stir until powder dissolves. (3.) Determine how many drops of iodine are needed to turn the Vit. C solution a blue-black color. Pour equal portions of Vit. C solution into four jars. Add 5 ml. starch solution to each. Fill eyedropper with iodine, add it to jar A, and count drops, stopping after each addition of 5 drops and stirring. Continue adding iodine until solution turns a blue-black color and stays that way after stirring. Record number of drops this took. Repeat using jars B, C, and D. Calculate the average number of drops of iodine needed to react with the 25 mg. of Vit. C. Use as the denominator in the right side of the equation in step 4. (4.) Determine amount of Vit. C in each of several packaged juice drinks by pouring 125 ml. of juice and 5 ml. of starch solution into a baby food jar. Add drops of iodine and stir after each addition of 5 drops until solution remains blue-black. Repeat on each juice and repeat experiment 3 times. Use this formula to calculate the number of mg. of Vit. C in each juice: mg. of Vit. C in juice = <math>\frac{25 \text{ mg. of Vit. C}}{\text{# of iodine drops for this juice sample} \times \frac{\text{# of iodine drops for standard Vit. C solution}}{25 \text{ mg. of Vit. C}}}</math></p> <p>(5.) Analyze data to determine whether hypothesis was proved or disproved. Main Materials: Tincture of Iodine; Cornstarch; Distilled Water; 100 mg. Vit. C Tablet; Eyedropper; Jars Marked A, B, C, D; Variety of Juice packages</p> <p><b>Results</b> Some juices with high amounts of fruit juice had lower amounts of Vit. C than they claimed to have, and only one juice really had 100% of the Vit. C RDA even though 7/10 claimed to have 100%.</p> <p><b>Conclusions/Discussion</b> The amount of natural fruit juice does not directly affect the amount of Vit. C in packaged juice drinks. Manufacturers of some drinks with low amounts of natural fruit juice probably include artificially added ascorbic acid (a component of Vit. C) to produce high Vit. C levels.</p>	
<b>Summary Statement</b> I measured Vitamin C levels in 10 packaged juice drinks and determined that the amount of natural fruit juice does not directly affect the level of Vitamin C.	
<b>Help Received</b> Parents purchased supplies and cleaned equipment; Teacher loaned scientific equipment.	