



**CALIFORNIA STATE SCIENCE FAIR  
2012 PROJECT SUMMARY**

<b>Name(s)</b> <b>Maddison C. Perkins</b>	<b>Project Number</b> <b>J0620</b>
<b>Project Title</b> <b>Electrify Your Electrolytes</b>	
<p style="text-align: center;"><b>Abstract</b></p> <p><b>Objectives/Goals</b> The objective of my project was to determine which drink contained the highest amount of electrolytes. Since electrolytes are lost during exercise through our perspiration, I wanted to find a drink that could replace them the best after a workout. Electrolytes, like potassium, contain free ions that conduct electricity. These ions are important for many normal bodily functions. Out of a variety of beverages tested, I believe that the juices will have some of the highest number of electrolytes.</p> <p><b>Methods/Materials</b> Sixteen beverages including juices, teas, sports drinks, energy drinks, enhanced and regular waters were tested five times and an average was used for comparison. The ability of tested beverages to conduct an electrical current was tested using a homemade conductive sensor consisting of a 9-volt battery, and a multimeter. The multimeter was used to measure the electrical current in micro-amps. The average for each beverage was plugged into the conductance formula, <math>G=I \text{ (current)}/V \text{ (voltage)}</math>, to get the electrolytes in Siemens. I used a copper wire, a pen tube, alligator clips, and 9-volt battery to make the conductive sensor.</p> <p><b>Results</b> Tomato juice had a conductance of one 17.05 siemens and V8 had a conductance of one 13.19 siemens. All other beverages had less than 5 siemens.</p> <p><b>Conclusions/Discussion</b> The tested hypothesis was correct. Since tomato juice conducted a stronger current, it contained more electrolytes than the other beverages. This could be due to its lower pH content compared to the other drinks which causes it to have more H<sup>+</sup> ions.</p>	
<b>Summary Statement</b> This project attempted to describe the relative quantity of electrolytes in a beverage in terms of its ability to conduct an electrical current in an effort to discover the beverage that was best for me to drink after a workout.	
<b>Help Received</b> Parents helped with pictures and sensor.	