



# CALIFORNIA STATE SCIENCE FAIR 2014 PROJECT SUMMARY

<b>Name(s)</b> <p style="text-align: center; margin-top: 10px;"><b>Jacob R. Salmers</b></p>	<b>Project Number</b> <div style="text-align: right; margin-top: 10px;">34640</div>
<b>Project Title</b> <p style="text-align: center; margin-top: 10px;"><b>Illuminating Electrolytes: A Study of Electrolyte Levels in Sports Drinks</b></p>	
<p style="text-align: center;"><b>Abstract</b></p> <p><b>Objectives/Goals</b>        The experiment is being performed to see which drink would provide the best electrolyte replacement for people doing physical activity. The hypothesis is "If various liquids are tested for electrolytes through strength of conductivity, then Vitamin Water will have the highest conductivity."</p> <p><b>Methods/Materials</b>  <b>Materials:</b>        Multimeter [setting at 2 mA]        Plastic Drinking Straw        8" lengths of 20 gauge copper wire        9-Volt Battery        cup of Gatorade, cup of PowerAde, cup of Vitamin Water Zero, cup of Vitamin Water, cup of Orange Juice, cup of Bottled Water        Distilled Water for washing the apparatus between uses.  <b>Procedure:</b>        Step one: Pour the amount [1 cup] of each electrolyte containing liquid into a separate plastic cup.        Step two: Wrap each length of wire around the straw at opposite sides and connect to battery and multimeter.        Step three: Immerse the straw and copper wire apparatus in each solution for 90 seconds to stabilize conductivity reading.</p> <p><b>Results</b>        The results are as follows: at the base line water had a conductivity of .003 Siemens, followed by orange juice with a value of .020 Siemens. After that was Vitamin Water Zero with a .028 Siemen conductivity. Power Ade was next in the running with a .061 Siemens conductivity, then Gatorade with a Siemen reading of .084, and in first place by a landslide was Vitamin Water with a Siemen rating of .181.</p> <p><b>Conclusions/Discussion</b>        According to the data collected, the hypothesis was supported. It is supported by the data that all of the sports drinks had more electrolytes than the control. Some problems that occurred with this project were that the data on the multimeter fluctuated a few numbers at a time as the apparatus or the solution moved slightly so what was done in readings were taken at 30 sec. intervals. If I were to do this project again I would have done the evaporation method so that I could find the content of each electrolyte.</p>	
<b>Summary Statement</b> This project is about using the scientific method to test the electrolyte levels in various sports drinks.	
<b>Help Received</b> dad helped glue things down to the board	