CALIFORNIA STATE SCIENCE FAIR
2016 PROJECT SUMMARY

Name(s)
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Project Number
36238

Project Title
Electrolyte Challenge: Gatorade vs. Orange Juice

Abstract

Objectives/Goals
My objective is to prove that orange juice has more electrolytes than sports drinks and delivers them best by making a conductance sensor to test the electrical conductivity of both orange juice and sports drinks.

Methods/Materials
The materials that I used to make a conductance sensor were digital multimeter, two alligator clip leads, a kΩ resistor, copper wire, 24-gauge,, a 9V battery clip, a 9V battery, and a plastic straw.The materials I used to have my tests go through efficiently were paper towels, tap water in room temperature, orange juice in room temperature, Gatorade in room temperature, glass bowls, a lab notebook, and distilled water (dH2O) in room temperature.
Clean the eight small bowls with warm soapy water, rinse thoroughly, and dry them right away with a clean dry cloth or paper towel. This will remove ions in the tap water. If you want to be extra careful, rinse the bowls with distilled water before drying. Use these bowls to rinse the conductance sensor between uses. Now place the conductance sensor in the tap water. Tap the sensor on a paper towel to remove drops of tap water. Place the sensor in the sports drink and measure the current. Record the current in the lab notebook, and remember to record units of milliamps. Tap the sensor dry, and then dip the sensor in tap water, then in the three bowls of distilled water.Rinse the sensor in the tap water and then in all three distilled water bowls.

Results
I completed three trials and combined the results to get the my result. The final result for the conductivity of Gatorade is 26.3 milliamps or if converted to amps, .063 amps. The final results for the conductivity of orange juice is 46 milliamps or if converted to amps, .046 amps. This pertains to my objective of proving that orange juice has a higher conductivity than Gatorade.

Conclusions/Discussion
I think my results would have come out more efficiently than what my results came to be. The copper wire kept on slipping when I put the conductance sensor in the drinks, and the multimeter was reading 0.00 at first, but I got my results after a few trial and errors. I also think that there would have been more variety in the results in knowing more drinks and the conductivity of different drinks.

Summary Statement
What my project is about is proving that orange juice has a higher conductivity than Gatorade.

Help Received
I built the conductance by myself after an internet research about conductance sensors.