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RESEARCH ARTICLE

ELECTROLYTE QUEST CASE STUDY – DO SPORT DRINKS TRULY DELIVER WHAT THEY PROMISE?

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ABSTRACT

The makers of sports drinks advertise heavily that their products have sufficient electrolytes to replenish an athlete after an extensive workout. New Powerade with Ion 4, for example, advertises that it is complete “with four electrolytes in the same ratio typically lost in sweat.” But, are sport drinks truly the best source of electrolytes? This paper sets out to prove that there are other alternative drinks to sport drinks that contain the same amount or even more electrolytes and can be a great source to replenish an athlete after an exhausting workout.

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INTRODUCTION

It is a common fact that exercise is the key to staying healthy. It is also commonly known that exercise depletes the body's fluids and minerals (Whyte 2019). After extensive exercising, doctors recommend that athletes replenish their bodily fluids and salts by drinking something other than water (Whyte 2019). It is commonly known that these salts or electrolytes are found in sport drinks (Whyte 2019). Electrolytes are minerals like potassium, calcium or sodium that help us keep our fluid levels such that we have a proper balance (Healthwise staff 2018). We lose those electrolytes when we sweat (Healthwise staff 2018). Proper concentration of electrolytes is crucial for our bodies since our bodies require electrolytes to function well (Whyte 2019). Differences in concentration of electrolytes inside and outside of our cells allows our nerve and muscle fibers to send electrical impulses (Whyte 2019). We are constantly bombarded with advertisements claiming that sport drinks are most efficient when it comes to replenishing electrolytes. For example, Powerade advertises its Ion 4 drink as an “advanced electrolyte system.” Moreover, Gatorade advertises that “Nothing beats Gatorade – Carbs to Compete. Electrolytes to Replenish.” By making such claims that only sports drinks can replenish lost electrolytes due to extensive exercise, sports drink manufacturers have been very profitable (Rovell 2010).

For example, Gatorade products raised \$827 million in 2009 (Rovell 2010). In comparison, Powerade from ION4 and ZERO products raised \$685 million during the same time period (Rovell 2010). However, it is also true that electrolytes or salts are present in other drinks as well, such as juices or milk. An experiment was conducted to measure electrolytes in the following thirteen drinks: V8 vegetable juice, whole milk, chocolate milk, red bull, orange juice, Gatorade Fierce, Vitamin Water Squeezed Lemonade, apple juice, Powerade Fruit Punch, Propel Berry, Monster, tap water and distilled water.

RESEARCH METHODS

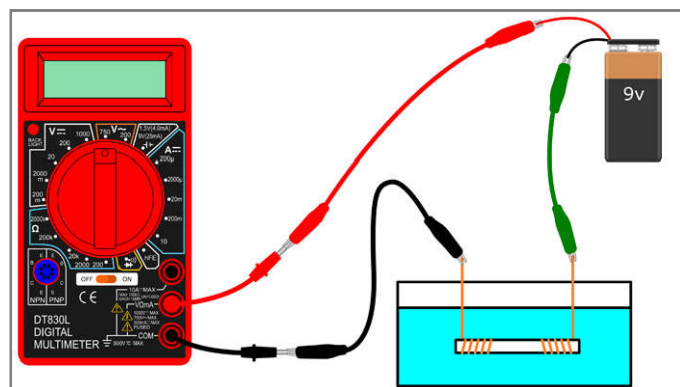
To measure electrolytes, a multimeter was used. The following materials were utilized: a multimeter, alligator clips, copper wire, 9V battery, plastic straw and Dixie cups (Whyte 2019).

The following steps were followed for every drink:

- An electrical current was measured in amps using a multimeter
- Conductance was calculated by dividing current by voltage (9V Battery).
- Since conductance is proportionate to electrolyte concentration, the amount calculated in step 2 was used to determine each respective drink's concentration of electrolytes.

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	Name of Drink	Electrical current in amperes	Conductance in siemens
1	V8 Vegetable Juice	125.6	13.95
2	Whole Milk	21.95	2.438
3	Chocolate Milk(2% Milk Fat)	20.96	2.328
4	Red Bull	18.08	2.008
5	Orange Juice	17.37	1.93
6	Gatorade Fierce	17.33	1.925
7	Vitamin Water (Squeezed lemonade)	15.18	1.686
8	Apple Juice	15.06	1.673
9	Powerade (Fruit Punch)	13.05	1.45
10	Propel(Berry)	11.24	1.248
11	Monster	8.93	0.992
12	Tap Water	6.22	0.69
13	Distilled Water	0.18	0.02



RESULTS AND DISCUSSION

Using the procedure described above, the following results were recorded for each respective drink: Based on the results described above, the drink with the most concentration of electrolytes is V8 Vegetable juice. Moreover, out of sports drinks, Gatorade was a clear outperformer in terms of electrolyte concentration. Finally, after V8 Vegetable juice, all other drinks were closely clustered with similar electrolyte concentrations. Finally, it is notable to mention that this experiment was only measuring concentration of electrolytes. When choosing a drink, athletes should consider other factors, such as calories and carbohydrates per serving (Gilbert 2019). Many juices have high amounts of carbohydrates that add calories and require water to digest.

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