

The water restoring capacity of gatorade

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The water restoring capacity of Gatorade Introduction With almost 60% of the body the body constituted by water (Zane E C), water dynamics and balance becomes critical to human existence. The human body has an elaborate, complex and almost foolproof mechanism for water balance that is meant to restore homeostatic balance. Despite these mechanisms, exercising in hot and humid conditions can rapidly dehydrate an individual in 30 minutes. Studies have shown that a loss of 1% of water in an individual can cause severe dehydration and fatigue. It was found that thirst is not triggered until 1% of the body weight is lost (Jour. Internal med). Studies find that exercisers typically only replace 50% of water lost and even professional runners underestimate their water needs (Quin E). Studies at the Gatorade Institute, USA found that runners underestimated their sweat loss by 46% and their fluid intakes by 15% resulting in only replacing 30% of the fluids lost (Gatorade institute of sports medicine).

Hypothesis

In this context it becomes pertinent to examine what makes for an ideal drink. Water is increasingly becoming a less popular fluid of choice and place is taken over by formulated, tasty and often sweetened sports drinks. Infact, a conference paper from the American college of sports medicine reported that exercisers drank 25% more of Gatorade than water after a workout. Children are found to prefer drinks like Gatorade 90% of the time compared to water (Davis J M). “ When only water was supplied, children did not drink as much as they needed to,” the journal said. However, Gatorade’s claim to have better merits over water in meeting the body’s water needs is being challenged. Robert Robergs, a UNM exercise physiologist who had been studying Gatorade’s ability to rehydrate the body says, " Theres nothing <https://assignbuster.com/the-water-restoring-capacity-of-gatorade/>

magical about Gatorade that hydrates the body better." " You put water and Gatorade in front of an athlete and they prefer to drink Gatorade just because it tastes better." Robergs felt that it was the carbohydrates found in the Gatorade that led to a greater sense of well being (Daily Lobo)

The controversy led to our experiment based on the following hypothesis:

Statement of hypothesis:

There are differences in the water resorting capacity of Gatorade , natural juices and water.

Experimental design

The subjects were divided into four groups.

The first was a control group that was not given any fluids.

The second group was given water.

The third group drank cranberry juice.

The fourth group was given Gatorade to drink.

Urine samples from all four groups were collected at half an hour intervals for two hours. The samples were measured for volume (output), specific gravity and pH changes.

Results

The following results were obtained for the three fluids with respect to urine out put, Specific gravity and pH. The results are deduced from Standard Deviations found for each parameter without considerations for individual variations.

Urine output

The urine output peaked for water group and cranberry juice group at the third reading (1 ½ hours). The Gatorade group showed a peak at the second reading (one hour). (SD 96. 52-water, SD 105. 86-cranberry, SD 108. 52-

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Gatorade)

Water and cranberry juice showed similar water retaining properties over the two-hour period. The urine output with water had a more even distribution over time compared to the other two drinks. The urine output with the Gatorade group was more evenly distributed than cranberry juice but water fared better than Gatorade on this parameter.

No appreciable variation in specific gravity was found with any of the fluids under study.

There were pH variations in the groups over time but were not dramatic. Surprisingly the water group seemed to exhibit acidic pH over the entire period and cranberry juice (widely thought to foster acidity) did not cause acidity in the group. The pH of urine samples from the Gatorade group was more alkaline over the entire period of testing.

Discussion

The Institute of Medicine recommends the intake of 3.3 liter of beverages/day for men and 2.2 liters of beverage/day for women. The results show that the peak urine output with Gatorade occurred in one hour suggesting rehydration with Gatorade may have to be done more frequently than with water or cranberry juice. This is especially important during exercise as it has been found that for every 100 calories expended an extra 4 ounces have to be consumed over the daily intake (Convertino et al). As the results indicate water to be excreted less and more evenly over the two-hour period, it may indicate that water may be the optimal hydrating fluid of choice for sustained hydration. The sums of the SDs for total outputs are water SD water-317.97, Cranberry juice- 298.34, Gatorade- 301.04. It suggests according to this data, that cranberry juice has the least diuretic

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properties among the three. No variations were found in the three groups with respect to three groups. But controls showed a higher specific gravity suggesting that not drinking fluids obviously leads to dehydration. The pH of urine samples in the control group was more acidic than the other three groups. The water group was more acidic compared to the others but fluctuations were minimal and the readings were closer to the controls. The Gatorade group had a basic value for urine pH suggesting better electrolyte restoration amongst this group (Quinn. E, " Salt needs of athletes). Plasma pH is between 7.35- 7.45 the Gatorade group showed a urine pH of 7.43.

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