

Poster presentation

Influence of bottled water on rehydration following a dehydrating bout of cycling exercise

Daniel Heil* and John Seifert

Address: Movement Science/Human Performance Laboratory, Department of Health and Human Development, Montana State University, Bozeman, MT 59717, USA

Email: Daniel Heil* - dheil@montana.edu

* Corresponding author

from 2009 International Society of Sports Nutrition Conference and Expo
New Orleans, LA, USA. 14–15 June 2009

Published: 31 July 2009

Journal of the International Society of Sports Nutrition 2009, **6**(Suppl 1):P9 doi:10.1186/1550-2783-6-S1-P9

This abstract is available from: <http://www.jissn.com/content/6/S1/P9>

© 2009 Heil and Seifert; licensee BioMed Central Ltd.

Background

The purpose of this study was to compare the ability of two types of bottled water to rehydrate cyclists following a dehydrating bout of cycling exercise. It was hypothesized that rehydration would occur faster and/or more completely following the consumption of bottled glacier water supplemented with Alka-PlexLiquid™ (experimental condition) as compared to a filtered bottled water (placebo condition).

Methods

Ten male cyclists (Mean \pm SD: 40 \pm 5 years age, 51.3 \pm 7.8 ml/kg/min maximal oxygen uptake) performed two trials (1-week apart) of stationary cycling in a warm room (27.5–28.5°C, \geq 50% relative humidity) for 75–105 minutes at a power output that initially elicited 70–80% of maximal heart rate. Subjects exercised until dehydrating to -2.5% of pre-exercise nude body weight. Each cycling bout was followed immediately by the consumption of either the experimental (Akali; Glacier Water Company, LLC; Auburn, WA USA) or placebo (Aquafina; PepsiCo Inc., Purchase, NY USA) bottled waters (counterbalanced order, double-blind design) in a volume equivalent to body weight lost. Blood and urine samples, as well as nude body weight, were measured at fixed time points: Immediately pre- and post-exercise, and 30, 60, 90, 120, and 180 minutes post-exercise. Urine samples were analyzed for volume output and specific gravity, while changes in total serum protein were determined from the blood samples. Data were evaluated with paired t-tests

and repeated measures ANOVA with planned contrasts at the 0.05 alpha level.

Results

Neither absolute (Mean \pm SE; -2.00 \pm 0.05 and -1.95 \pm 0.07 kg) nor relative (-2.6 \pm 0.1 and -2.5 \pm 0.1%) amounts of body mass lost differed between placebo and experimental dehydration ($P > 0.05$), respectively. Urine output was significantly higher at time points \geq 60 minutes post ingestion: 103.5 \pm 24.4 versus 58.4 \pm 14.0 mls, 183.1 \pm 33.1 versus 125.2 \pm 33.4 mls, 198.7 \pm 35.9 versus 97.7 \pm 25.5 mls, 234.5 \pm 53.0 versus 107.6 \pm 21.6 mls, for 60, 90, 120, and 180-min post ingestion, respectively ($P < 0.05$). At the same time points, urine specific gravity tended to be higher for the experimental (1.014–1.012) than placebo water (1.005–1.008; $P = 0.02$ –0.08). Lastly, serum protein tended to be less concentrated in the blood for the experimental water trial than for the placebo water trial at 120-minutes (7.7 \pm 0.03 versus 6.7 \pm 0.2 g/L; $P = 0.08$) and 180-minutes (7.8 \pm 0.3 versus 6.7 \pm 0.2 g/L; $P = 0.08$) post ingestion. Water retention at the end of the 3-hour recovery period, calculated as 1 minus the ratio of total urine volume (TUV) to ingested water volume (IWV) as a percentage ($[1 - (TUV/IWV)] \times 100$), was significantly higher for the experimental water trial (79.2 \pm 3.9%) than for the placebo water trial (62.5 \pm 5.4%; $P < 0.05$).

Conclusion

Consumption of the experimental water resulted in significantly less urine output, a tendency for more water to be

retained in the blood, and a higher overall water retention rate over the placebo water. Collectively, these results indicate that consumption of the experimental bottled water following a dehydrating bout of exercise provided faster and more complete rehydration to cyclists than the highly-filtered bottled water. It is likely that the Alka-Plex-Liquid™ supplement, the high pH of 10.0, or some other unidentified component of the experimental water, was responsible for these observations.

Acknowledgements

This study was supported by the Glacier Water Company, LLC, Auburn, WA 98001.

Publish with **BioMed Central** and every scientist can read your work free of charge

"BioMed Central will be the most significant development for disseminating the results of biomedical research in our lifetime."

Sir Paul Nurse, Cancer Research UK

Your research papers will be:

- available free of charge to the entire biomedical community
- peer reviewed and published immediately upon acceptance
- cited in PubMed and archived on PubMed Central
- yours — you keep the copyright

Submit your manuscript here:
http://www.biomedcentral.com/info/publishing_adv.asp

