

## **Consuming Vegetable-Based Beverage Results in Longer Time to Exhaustion than Flavored Water Following Glycogen-Depleting Exercise and Short-Term Recovery**

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Evidence from studies with endurance athletes have demonstrated the ingestion of exogenous carbohydrate during prolonged exercise can extend time to fatigue and improve endurance performance. There is evidence that a beverage containing multiple sources of carbohydrate results in faster gastric emptying and intestinal absorption, which may minimize gastrointestinal distress and maximize carbohydrate oxidation during prolonged exercise. The vegetable-based beverage of interest has a unique glucose- sucrose-fructose ratio of 13.5:1.5:1, which has never been compared to other carbohydrate mixtures. **PURPOSE:** To investigate the effect of a vegetable-based beverage on time to exhaustion following glycogen-depleting exercise and a four-hour recovery period. **METHODS:** Twenty-eight trained endurance athletes between the ages of 19 and 50 years participated in this randomized, crossover study. Participants completed three submaximal experimental trials that consisted of a glycogen depletion session, a four-hour recovery, and an endurance trial on a cycle ergometer. Vegetable juice (VJ), a commercial sports drink (CD), and flavored water (FW) were randomly assigned to each participant for each of the three trials that provided 1.0 g CHO·kg of body mass (BM) or the placebo (FW) immediately after and at two hours into recovery. Blood lactate, blood glucose, perceived exertion, mood, appetite, and GI distress were measured. **RESULTS:** Analysis revealed an interaction effect between endurance trial time and the type of beverage consumed ( $F = 6.05, p = 0.046$ ). Mean endurance trial time to fatigue for VJ, CD, and FW was 26.7 (SD = 14.69), 26.3 (SD = 15.14), and 21.5 (SD = 11.96) minutes, respectively. Dunnett's test determined VJ and FW were significantly different. Mean post-endurance trial blood lactate levels were significantly lower for FW than both VJ and CD ( $F = 6.05, p = 0.005$ ). Mean post-endurance blood glucose level was significantly lower for VJ than FW ( $F = 4.28, p = 0.019$ ), but not CD. **CONCLUSION:** This study suggests that ingesting two doses at 1.0 g CHO·kg<sup>-1</sup> BM of a vegetable-based beverage during recovery from glycogen-depleting exercise resulted in significantly longer time to exhaustion than consuming flavored water. The results of this study support the recovery effects of this novel vegetable-based beverage.

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