Consuming Vegetable-Based Beverage Results in Longer Time to Exhaustion than Flavored Water Following Glycogen-Depleting Exercise and Short-Term Recovery
Rylie A. Pietrowicz, Christine A. Karpinski, Ryan Saltzman, Kali J. Oberholtzer, Joshua C. Anthony, Melissa A. Reed.
West Chester University, West Chester, PA, Campbell Soup Company

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$^{-1}$·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.

Funding Disclosure: Funding was received from Campbell Soup Company; 1 Campbell Place Camden, NJ 08103-1701.