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Added protein maintains efficacy of a low-carbohydrate sports drink.

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Source

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Abstract

The purpose of the present study was to investigate the aerobic capacity characteristics of an isocaloric carbohydrate (CHO) plus **protein** (PRO) **drink** and a low-calorie CHO plus PRO **drink** against a traditional 6% CHO **sports** beverage. Twelve male and female trained cyclists exercised on 4 separate occasions at intensities that varied between 55 and 75% V(O2)max for 2.5 hours and then at 80% V(O2)max until fatigued. Supplements (255.4 +/- 9.1 mL) were provided every 20 minutes and consisted of a 4.5% carbohydrate plus 1.15% **protein** complex (CHO/PRO H), a 3% carbohydrate plus 0.75% **protein** complex (CHO/PRO L), a 6% carbohydrate supplement (CHO), or a placebo (PLA). Time to fatigue at 80% V(O2)max was significantly longer ($p < 0.05$) during the CHO (26.9 +/- 6.1 minutes, mean +/- SE), the CHO/PRO H (30.5 +/- 5.9 minutes), and the CHO/PRO L (28.9 +/- 6.5 minutes) trials compared with the PLA trial (14.7 +/- 3.4 minutes), with no significant differences among the CHO, CHO/PRO H, and CHO/PRO L treatments. In general, blood glucose, plasma insulin, and carbohydrate oxidation were elevated above PLA during the CHO, CHO/PRO H, and CHO/PRO L trials, whereas plasma free fatty acids, rating of perceived exertion, and fat oxidation values were lower during the CHO, CHO/PRO H, and CHO/PRO L trials compared with the PLA trial. Only minor differences in blood parameters occurred among the CHO, CHO/PRO H, and CHO/PRO L treatments. In summary, partially substituting PRO for CHO in a **sports drink** did not enhance aerobic capacity, but substitution was able to occur without loss of **efficacy**. Thus, adding PRO to a low-calorie CHO **sports drink** may be an effective strategy to enhance aerobic capacity while limiting carbohydrate and caloric consumption.