

Potato Ingestion as an Effective Race Fuel Alternative to Improve Cycling Performance in Trained Cyclists

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ABSTRACT

Carbohydrate (CHO) ingestion is an established strategy to improve endurance performance. Race fuels should not only sustain performance, but also be readily digested and absorbed and replenish electrolytes. Potatoes are a cost-effective option that fulfills these criteria; however, their impact on endurance performance remains unexamined. **PURPOSE:** Compare the effects of potato purée (POT) ingestion during endurance cycling on subsequent performance versus commercial CHO gel (GEL) or a control (water, CTL). **METHODS:** Twelve trained cyclists (31 ± 9 y; 71 ± 8 kg; VO_{2max} : 61 ± 9 mL/kg/min) consumed a standardized breakfast then performed a 2h cycling challenge (60-85% VO_{2max}) followed by a time trial (6kJ/kg body mass) while consuming POT, GEL, or CTL in a randomized-crossover design. POT, GEL and CTL were administered with U-[¹³C]glucose for an indirect estimate of gastric emptying rate. Repeated blood samples were collected. **RESULTS:** Time trial performance significantly improved ($P=0.03$) with POT (33.0 ± 4.5 min) and GEL (33.0 ± 4.2 min) versus CTL condition (39.5 ± 7.9 min); while POT and GEL conditions ($P=1.00$) had no difference. Post-challenge, blood glucose concentrations were lower ($P<0.001$) with CTL (75.5 ± 3.7 mg/dL) versus POT (92.2 ± 3.8 mg/dL) and GEL conditions (95.0 ± 3.8 mg/dL). Similar results ($P<0.001$) were observed post time trial for blood glucose concentrations (CTL, 65.6 ± 3.7 mg/dL; GEL, 96.7 ± 3.7 mg/dL; POT, 91.9 ± 3.7 mg/dL). No difference ($P=0.79$) in blood glucose concentrations were observed between GEL or POT conditions at both times. Post-challenge, no differences were found in blood lactate concentrations ($P=0.33$) between GEL (4.68 ± 0.43 mmol/L) and POT (3.98 ± 0.43 mmol/L). Plasma U-[¹³C]glucose enrichments were not different between GEL or POT throughout the trial ($P>0.05$). **CONCLUSION:** Potatoes served as a viable alternative to commercial gels by sustaining performance and blood glucose concentrations during endurance cycling events in trained cyclists.