Pre-Sleep Low Glycemic Modified Starch Does Not Improve Next Morning Running Performance in Endurance Athletes

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PURPOSE: To determine the effects of pre-sleep supplementation with a novel low glycemic index (LGI) carbohydrate (CHO) on next morning substrate utilization, gastrointestinal distress (GID), and endurance running performance (5km time trial, TT) using a double-blind, randomized placebo-controlled, crossover design. METHODS: Trained participants (n=14, 8/6 male/female; 28±9 yrs) were familiarized with the procedures and completed a VO2peak test (to determine eligibility). For the experimental trials (3 total), participants were randomly assigned to consume 270 kcal of LGI CHO, 270 kcal of high glycemic index (HGI) CHO, or 0 kcal of placebo (PLA) at least 2 hours after their last meal and within 30 minutes prior to sleep the evening before each trial. Each trial was separated by a minimum of 72 hours. Upon arriving to the lab in a fasted state, baseline measures of energy expenditure (REE), substrate utilization, blood glucose, satiety, and GID were assessed. Next, an incremental exercise test (IET) was performed at 55, 65, and 75% of the participants VO2peak (VO2peak 55 ± 7 ml/kg/min). GID and rating of perceived exertion (RPE) was recorded every five minutes and substrate utilization was obtained on a 15 second interval. Finally, participants were instructed to complete a best effort 5km TT on a treadmill. Significance was established at p≤0.05. RESULTS: There were no differences across supplement in any measure at baseline. During IET, there was a trend for greater CHO utilization with LGI compared to HGI (PLA, 56±11; HGI, 60±14; LGI, 63±14%, p=0.16, ƞ²=0.14). Supplement had no significant effect on GID at any point. 5km TT performance was also unaffected by supplement (PLA, 21.6±9.5; HGI, 23.0±7.8; LGI, 24.1±4.5 min, p=0.94, ƞ²=0.01). CONCLUSION: Pre-sleep CHO supplementation did not affect next-morning resting substrate utilization, BG, GID, or 5km TT performance. The trend towards higher CHO utilization during IET after pre-sleep LGI, might suggest that such supplementation increases morning CHO availability.