The effects of low and high glycemic index foods on exercise performance and beta-endorphin responses.

Abstract: The aim of this study was to examine the effects of the consumption of foods of various glycemic index values on performance, \( \beta \)-endorphin levels and substrate (fat and carbohydrate) utilization during prolonged exercise. Eight untrained healthy males underwent, in a randomized counterbalanced design, three experimental conditions under which they received carbohydrates (1.5 gr. kg\(^{-1}\) of body weight) of low glycemic index (LGI), high glycemic index (HGI) or placebo. Food was administered 30 min prior to exercise. Subjects cycled for 60 min at an intensity corresponding to 65\% of VO\(_{2}\)max, which was increased to 90\% of VO\(_{2}\)max, then they cycled until exhaustion and the time to exhaustion was recorded. Blood was collected prior to food consumption, 15 min prior to exercise, 0, 20, 40, and 60 min into exercise as well as at exhaustion. Blood was analyzed for \( \beta \)-endorphin, glucose, insulin, and lactate. The mean time to exhaustion did not differ between the three conditions (LGI = 3.2 ± 0.9 min; HGI = 2.9 ± 0.9 min; placebo = 2.7 ± 0.7 min). There was a significant interaction in glucose and insulin response (P< 0.05) with HGI exhibiting higher values before exercise. \( \beta \)-endorphin increased significantly (P< 0.05) at the end of exercise without, however, a significant interaction between the three conditions. Rate of perceived exertion, heart rate, ventilation,
lactate, respiratory quotient and substrate oxidation rate did not differ between the three conditions. The present study indicates that ingestion of foods of different glycemic index 30 min prior to one hour cycling exercise does not result in significant changes in exercise performance, α-endorphin levels as well as carbohydrate and fat oxidation during exercise.

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