High Glycemic Index Foods, Overeating, and Obesity

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Abstract

Objective. The prevalence of obesity has increased dramatically in recent years. However, the role of dietary composition in body weight regulation remains unclear. The purpose of this work was to investigate the acute effects of dietary glycemic index (GI) on energy metabolism and voluntary food intake in obese subjects.

Methods. Twelve obese teenage boys were evaluated on three separate occasions using a crossover study protocol. During each evaluation, subjects consumed identical test meals at breakfast and lunch that had a low, medium, or high GI. The high- and medium-GI meals were designed to have similar macronutrient composition, fiber content, and palatability, and all meals for each subject had equal energy content. After breakfast, plasma and serum concentrations of metabolic fuels and hormones were measured. Ad libitum food intake was determined in the 5-hour period after lunch.

Results. Voluntary energy intake after the high-GI meal (5.8 megajoule [MJ]) was 53% greater than after the medium-GI meal (3.8 MJ), and 81% greater than after the low-GI meal (2.2 MJ). In addition, compared with the low-GI meal, the high-GI meal resulted in higher