



A rich source of Beta-Glucan

Title: Barley β -glucan reduces plasma glucose and insulin responses compared with resistant starch in men

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Abstract

Glucose and insulin responses have been reported to be lowered by acute consumption of soluble oat fiber or high amylose cornstarch. This study sought to determine if barley β -glucan and preformed resistant starch reduced glucose and insulin responses in men independently or if a synergism exists between the two carbohydrate sources. A total of 20 men (10 control, 10 overweight; average body mass index, 23.8 vs 29.0) were fed a controlled diet for 2 days before each treatment containing 75 g available carbohydrate. Fasting subjects consumed 10 treatments consisting of glucose or 1 of 9 muffins containing 3 levels of resistant starch (0.1, 6.1, or 11.6 g/tolerance) and 3 levels of β -glucan (0.1, 3.1, or 5.8 g/tolerance) in a Latin square design. Plasma glucose and insulin responses were determined over 4 hours after each treatment. Compared with controls, overweight subjects had significantly higher mean glucose (5.5 vs 6.0 \pm 0.1 mmol/L) ($P < .003$) and insulin (153 vs 285 \pm 21 mmol/L) ($P < .0001$) concentrations. Glucose ($P < .001$) and insulin ($P < .003$) responses were lower and returned to fasting quicker in the controls than in overweight subjects. The highest β -glucan level was the most effective in lowering glucose ($P < .001$) and insulin responses ($P < .0001$). Average glucose ($P < .025$) and insulin ($P < .0001$) areas under the curve were lowest after the muffins containing the high β -glucan. Resistant starch content was less effective than β -glucan in reducing glucose or insulin response. Acute consumption of barley β -glucan, but not resistant starch, in muffins was effective in reducing glucose and insulin responses in men who were mildly insulin-resistant.