



## **Barley $\beta$ -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  $\beta$ -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 75g 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 11.6g/tolerance) and 3 levels of  $\beta$ -glucan (0.1, 3.1, or 5.8g/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 mmol/L) ( $P < .003$ ) and insulin (153 vs 285  $\mu$ mol/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  $\beta$ -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  $\beta$ -glucan. Resistant starch content was less effective than  $\beta$ -glucan in reducing glucose or insulin response. Acute consumption of barley  $\beta$ -glucan, but not resistant starch, in muffins was effective in reducing glucose and insulin responses in men who were mildly insulin-resistant.