



## **Consumption of Whole Grains Containing Beta-Glucan Altered Short-Term Satiety and Glycemic Response in Overweight Women**

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Beta-glucan, a predominant water soluble fiber in oats and barley, has been demonstrated to have a significant cholesterol-lowering effect and to improve acute glycemic response. However, the role of beta-glucan in the regulation of satiety and weight management is not clear. The objective of this study was to determine the effect of a meal with and without the soluble fiber beta-glucan (BG) on satiety and glucose response. Four isocaloric test meals were fed to overweight subjects (women,  $n = 10$ ; men,  $n = 9$ ; BMI =  $30 \pm 1$ ; age =  $54 \pm 2$  y) using a randomized crossover design. The treatments included: glucose (75g of glucose), wheat (0 g of beta-glucan (0BG)), wheat-barley mixture (1g of beta-glucan (1BG)), and barley (2g of beta-glucan (2BG)) served as cooked cereal. All cereal treatments were controlled for macronutrient and water intake. Prior to the test meals, control diets (15 percent protein, 50 percent carbohydrate, and 35 percent fat) were fed for 1 day. Previously validated visual analog scales (VAS) were used to determine perceived hunger, fullness, satisfaction, nausea, thirst, and drowsiness. At 2 hours after consumption of the test meals, energy and water intake of a standardized lunch was measured. Blood glucose and VAS ratings were measured periodically from fasting until 2 hours after consumption of test meals. In women, peak glucose response and area under the curve (AUC) were significantly decreased after consumption of the meal with 2BG compared with 0BG or 1BG. Mean VAS ratings for Hunger and How much I can eat were significantly reduced at 15 and/or 30 min after consumption of 1BG and 2BG compared with 0BG. In contrast, in men, a weak response of glucose and VAS ratings of satiety was observed after consumption of beta-glucan. In both women and men, short-term energy and water intake was not changed by beta-glucan intake. These data imply that acute reduction of the glycemic response and hunger ratings in overweight women requires consumption of at least 2g and 1g of beta-glucan per meal, respectively. However, in overweight men greater amounts of beta-glucan per meal is likely to be required for substantial glucose and satiety rating effects. This study further suggests the beneficial effects of beta-glucan on glucose metabolism and, possibly, satiety. Studies in a larger population will be required to verify the effect of beta-glucan on gender.