

Beneficial effects of viscous dietary fiber from Konjac-mannan in subjects with the insulin resistance syndrome: Results of a Controlled Metabolic Trial

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OBJECTIVE: Dietary fiber has recently received recognition for reducing the risk of developing diabetes and heart disease. The implication is that it may have therapeutic benefit in prediabetic metabolic conditions. To test this hypothesis, we investigated the effect of supplementing a high-carbohydrate diet with fiber from Konjac-mannan (KJM) on metabolic control in subjects with the insulin resistance syndrome. **RESEARCH DESIGN AND METHODS:** We screened 278 free-living subjects between the ages of 45 and 65 years from the Canadian-Maltese Diabetes Study. A total of 11 (age 55 \pm 4 years, BMI 28 \pm 1.5 kg/m²) were recruited who satisfied the inclusion criteria: impaired glucose tolerance, reduced HDL cholesterol, elevated serum triglycerides, and moderate hypertension. After an 8-week baseline, they were randomly assigned to take either KJM fiber-enriched test biscuits (0.5 g of glucomannan per 100 kcal of dietary intake or 8-13 g/day) or wheat bran fiber (WB) control biscuits for two 3-week treatment periods separated by a 2-week washout. The diets were isoenergetic, metabolically controlled, and conformed to National Cholesterol Education Program Step 2 guidelines. Serum lipids, glycemic control, and blood pressure were the outcome measures. **RESULTS:** Decreases in serum cholesterol (total, 12.4 \pm 3.1%, P <0.004; LDL, 22 \pm 3.9%, P <0.002; total/HDL ratio, 15.2 \pm 3.4%, P <0.003; and LDL/HDL ratio, 22.2 \pm 4.1%, P < 0.002), apolipoprotein (apo) B (15.1 \pm 4.3%, P <0.0004), apo B/A-1 ratio (13.1 \pm 3.4%, P < 0.0003), and serum fructosamine (5.2 \pm 1.4%, P <0.002) were observed during KJM treatment compared with WB-control. Fasting blood glucose, insulin, triglycerides, HDL cholesterol, and body weight remained unchanged. **CONCLUSIONS:** A diet rich in high-viscosity KJM improves glycemic control and lipid profile, suggesting a therapeutic potential in the treatment of the insulin resistance syndrome.