Effect of a high protein, energy restricted diet on body composition, glycaemic control and lipid levels in hyperinsulinemic subjects

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Background: It is not clear whether varying the protein-to-carbohydrate ratio of weight loss diets benefits body composition or metabolism. One previous study in subjects with type 2 diabetes has shown that replacing protein for carbohydrate in a weight loss diet resulted in greater abdominal fat loss in women (1).

Objective: To compare two weight loss diets differing in carbohydrate/protein ratio on body composition, glucose and lipid metabolism and markers of bone turnover in subjects with elevated plasma insulin.

Design: Parallel design with interventions either a high protein diet from meat, poultry and dairy foods (HP; 27% of energy as protein, 44% carbohydrate) or a standard protein diet low in meat, poultry and dairy foods (SP; 16% energy as protein, 57% carbohydrate) during 12 weeks of energy restriction (6.5 MJ/day) and 4 weeks of energy balance (8.2 MJ/day). Fifty-seven overweight volunteers with fasting insulin >12mU/L completed the study.

Results: Weight loss (−7.9 ± 0.5 kg) and total fat loss (−6.9 ± 0.4 kg) was not different between diets. Total lean mass was preserved more in the females on HP (−0.1 ± 0.3 kg) than SP (−1.5 ± 0.3 kg) (P = 0.02). The glycaemic response to the HP meal was less than to the SP meal at weeks 0 and 16 (P = 0.027) (see figure). After weight loss the glycaemic response decreased to a greater extent in the HP group (P = 0.049). The reduction in serum triacylglycerol concentrations was greater on HP (23%) than SP (10%) (P < 0.05). Markers of bone turnover, calcium excretion and systolic blood pressure were unchanged.

Conclusion: Replacing carbohydrate with protein from meat, poultry and dairy foods has beneficial metabolic effects and no adverse effects on markers of bone turnover or calcium excretion.

Reference

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Key words: dietary protein, body composition, glycaemic response