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The effect of a high protein weight maintenance diet on bone mineral density following a large and rapid weight loss

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Background – Intervention studies have found that weight reduction is accompanied by a reduction in bone mineral density, and weight regain is accompanied by regain in bone mineral density. It is unclear what happens to bone mineral density (BMD) during weight maintenance after weight loss. Interest in weight reducing high protein diets has been accompanied by concern about their potential for further detriment to bone.

Objective – The purpose of this study was to compare the effects of a high protein weight maintenance diet replete in calcium, to a high carbohydrate weight maintenance diet replete in calcium, on BMD following weight loss.

Design – One hundred and forty one overweight and obese men and women who had previously lost $\geq 10\%$ of their body weight using a very low energy diet (VLED) for 12 weeks were randomised to a high protein (HP) or high carbohydrate (HC) iso-energetic diet for weight maintenance, for 12 months. The HP diet featured lean red meat 3-4 times per week and the HC diet comprised low glycemic index carbohydrates.

Outcomes – Both dietary groups maintained their initial weight loss over the 12 month follow-up period (14.5 kg \pm 1.2 kg (P<0.001). Dual energy x-ray absorptiometry (DEXA) scans were performed at commencement and conclusion of the 12 month weight maintenance period to measure BMD. No significant differences were observed between the two groups at either time point. Neither the HP nor HC dietary group experienced any significant change in their BMD during the weight maintenance period.

Conclusion – DEXA scans indicated that 12 months of weight maintenance following 12 weeks of weight loss did not result in significant changes in BMD, regardless of dietary treatment. We can conclude that a HP diet adequate in calcium confers no detrimental effect on BMD during long-term weight maintenance.

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Cassia but not cinnamon reduces postprandial glucose and insulin responses to oatmeal in lean, young adults

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Background – Evidence for the effect of ‘cinnamon’ supplementation on glycemic control in people with Type 1 and Type 2 diabetes is inconclusive. Some short-term intervention studies have shown improvements in serum glucose or HbA1C levels while others found no improvement. Confusion over the botanical source of ‘cinnamon’ used in the studies may explain the different results.

Objective – To determine whether cinnamon (*Cinnamomum zeylanicum*) or cassia (*Cinnamomum cassia*) consumed with instant prepared oatmeal reduces postprandial glycemic and insulinemic responses.

Design – A randomised, crossover study was conducted in 10 healthy subjects (age: 26.2 \pm 3.9 yr, BMI: 22.4 \pm 2.1 kg/m²) using the standardised glycemic index (GI) testing methodology. The test meals were: 385 g instant prepared oatmeal, 385 g oatmeal with 6 g cinnamon and 385 g oatmeal with 6 g cassia. Fingerprick capillary blood samples were analysed for glucose and insulin concentrations. GI and insulin index (II) values were calculated using glucose sugar as the reference food.

Outcomes – The GI values of the three test meals were: 87 \pm 7 (oatmeal), 85 \pm 7 (oatmeal + cinnamon) and 68 \pm 4 (oatmeal + cassia). The GI value for the oatmeal + cassia test meal was significantly lower than the GI values of both the oatmeal (p < 0.05) and the oatmeal + cinnamon meals (p < 0.05). The II values of the three test meals were: 97 \pm 5 (oatmeal), 94 \pm 5 (oatmeal + cinnamon) and 59 \pm 5 (oatmeal + cassia). The II value for the oatmeal + cassia was significantly lower than the two other test meals (both p < 0.001).

Conclusion – The addition of 6 g cassia, but not cinnamon, to a standard meal significantly reduces the acute postprandial glycemic (22% reduction) and insulinemic (39% reduction) responses in healthy subjects. Further research into the potential benefit of cassia supplementation in the diet of people with impaired glucose metabolism or diabetes is warranted.