# **Concurrent Session 4:** Dietary Interventions for Metabolic Syndrome & Obesity

## Bowel, renal and bone health markers during weight loss on a high protein high red meat diet compared to an isocaloric high carbohydrate diet in overweight/obese men at 1 year

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**Background –** Little data are available on the long term safety of high protein high red meat weight loss diets compared to high carbohydrate high fibre diets.

**Objectives –** To assess bowel, renal and bone health markers during weight loss on a high protein high red meat diet (HP) compared with a high carbohydrate diet (HC) in overweight/obese men.

**Design –** We randomised 123 overweight/obese men to one of two parallel isocaloric weight loss diets - HP (n=61) and HC (n=62). Blood samples, 24 hr urine, 24 hr faecal samples and rectal biopsies were collected at baseline, wk 12 and at wk 52. Diets were HP: 6.9±0.7(SD) MJ, protein 33±3%en (energy), carbohydrate 37±4%en, fat 27±3%en, fibre 30±6 g/day; red meat 300 g 4 times per wk and HC: 6.7± 0.6 MJ, protein 21±2%en, carbohydrate 51±4%en, fat 25±4%en, fibre 38±4 g/day; red meat <100 g per wk.

**Outcomes –** Completers (wk 12 n=111; wk 52 n=65) had similar weight loss on both diets: wk 12: 8.4±3.4%; wk 52:10.8±6.5%. Faecal weight, pH, moisture, short chain fatty acids, phenol/*p*-cresol excretion were not significantly different between HP and HC at wk 12 or wk 52. Faecal water genotoxicity did not differ by diet at wk 12 ($P>0.1$) or wk 52 ($P>0.4$). In rectal tissue cells, telomere length, **a** measure of genome stability**,** increased on HP and HC at wk 12 and wk 52 ($P<0.0001$). Increase in telomere length correlated with weight loss r=0.697, $P<0.01$. Bone mineral density at wk 52 decreased less on HP than HC ($P=0.002$). Creatinine clearance declined on both diets at wk 12 but did not differ by diet and at wk 52 was not different from baseline ($P<0.01$).

**Conclusion –** Weight loss on HP showed no short term or long term adverse effects on safety markers compared with HC.

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## Consumer understanding of the attributes and consequences of high protein foods

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**Background –** People have difficulty in sustaining diets for weight control. Behavioural decision making theory (1) suggests that cognitive decision making leads to improved intention - behaviour consistency. Furthermore a model (2) pertaining to "functional food" use, argues that both attribute and consequence knowledge of foods are required to sustain use. While foods that induce satiety may reduce food consumption at the next eating occasion, different macronutrients exert a hierarchical effect on satiety with considerable evidence suggesting that protein exerts the most satiety.

**Objectives –** To elicit knowledge (cognitions) of high protein foods.

**Design –** Randomly selected (current dieters or past dieters) adults (n = 226) answered a postal questionnaire.

**Outcomes –** The sample comprised of males (42%) and females (58%), who, by self report, were classified as overweight (43%) and obese (24%) with 34% reporting current use of diet for weight control and 14% reporting being on a high protein diet (general high protein diet, 7% and CSIRO Total Well Being Diet [TWD], 7%).

Unprompted, knowledge of high protein foods mostly comprised of growth, muscle repair and development. When focused upon weight control, knowledge of high protein foods in respect to satiety was modest although when forced to rate (19) food "functions" across food groups, 'satiety'; 'helps me eat less' and 'controls hunger' were rated generally high (and similar to high fibre foods) and grouped together in factor analysis. However, 'weight control' was rated low (absolutely and relative to other food groups, $P<0.05$) and was found to be a distinct factor suggesting a disconnection between the function of satiety and the consequence of weight control. Those reporting being on high protein or TWD had no greater knowledge than others.

**Conclusions –** Our results suggest that participants possessed "attribute knowledge" but not "consequence knowledge" indicating that there is incomplete knowledge with implications for consequent lack of sustained adoption of high protein foods for weight control.

**References**

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2. Wansink, B., Westgren, RE. & Cheney, MM. (2005). Hierarchy of knowledge that relates to the consumption of a functional food. *Nutrition 21,* 264-268.