Concurrent Session 12

The effect of lupin kernel flour bread on satiety, blood glucose and insulin response
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Background - Lupin kernel flour (LKF) is derived from the kernel of lupin grain. LKF is rich in protein (42%), and fibre (30%), and contains negligible carbohydrate. Of all the nutrients investigated in relation to effects on hunger and food intake, dietary protein and fibre appear to have the greatest impact. Inclusion of LKF into high carbohydrate foods such as bread may increase post meal satiety and would be expected to reduce glycaemic load.

Objective - To determine the effect of consumption of LKF-enriched bread on: (1) postprandial blood glucose and insulin; and (2) hunger and food intake at a subsequent ad libitum meal.

Design - In a randomised cross-over trial, volunteers (n=17) consumed: (1) control white bread; (2) 12% (of final bread weight) LKF bread; and (3) 24% LKF bread for breakfast meals on three visits one week apart. All breakfast meals were matched for energy content. Blood samples were obtained, and questionnaires relating to satiety were completed, at baseline and multiple time points after breakfast. An ad libitum lunch was provided at 3 h.

Outcomes - Incorporation of LKF did not significantly alter the palatability of the bread. LKF-enriched bread resulted in a significant (P <0.05) and dose-related decrease in both the 3 h glucose and insulin areas under the curve. Self reported hunger and energy intake at the lunch meal were not significantly changed by LKF-enriched bread in comparison to the control bread.

Conclusions - Consumption of LKF-enriched bread has the potential to reduce post meal blood glucose and insulin. However, the results do not support the suggestion of increased satiety with increased protein and fibre content of the bread.

Whey proteins- GMP®, body fat reduction and altered insulin status in rats
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Background - The ability of some high protein diets to reduce energy intake, body weight and/or adiposity in overweight humans has been observed. The influence of particular sources of proteins has been examined, and there is some evidence for whey protein concentrate (WPC) being more effective than some other protein sources eg red meat, although how and why is not understood. The presence of glycomacropeptide (GMP®- NatraPep) in WPC a breakdown product of κ caseins could be important, as this can be present in significant amounts in some whey fractions eg from cheese manufacture.

Objective - To examine the influence of GMP with whey protein isolate (WPI) on rat weight gain and body composition, and metabolism.

Design - Twelve week old Wistar rats were fed ad libitum for 8 weeks with semipurified rodent diets containing 15 and 30% protein as whey protein isolate (WPI*) (control), WPI +10%GMP, WPI+20%GMP, BBQd beef and casein. The rats were then analysed for body composition, and fasted plasma assayed for triglyceride, insulin and glucose.

Outcomes - There was a significant reduction in weight gain in rats fed GMP relative to control. This was particularly so for the 30% protein treatments, with a 9% reduction in visceral fat with WPI +20% GMP relative to WPI alone. Plasma triglyceride and insulin concentrations were significantly lower eg 64% lower insulin in WPI+20% GMP group relative to WPI alone (P <0.02).

Conclusions - GMP had a significant reducing effect on body weight gain, abdominal fat, plasma insulin and lipid status, suggesting a possible mechanism whereby GMP might have its effect.

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