The effects of dietary protein on rat growth, body composition and insulin sensitivity
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Background - Recent literature suggests that a high protein diet may reduce body weight and improve insulin sensitivity in people with insulin resistance, non-insulin dependant diabetes mellitus and obesity. The impact of protein type in a high protein diet on body weight, composition and insulin sensitivity has not been investigated.

Objective – To determine whether a high protein diet (32\%) containing whey protein will reduce body weight and fat depots and improve insulin sensitivity to a greater extent than red meat in Wistar rats made insulin resistant by a high fat diet.

Design – Mature (9wk old) Wistar rats were fed a high fat diet (30\%w/w) for nine weeks to induce insulin resistance. Rats were then randomly allocated to a diet containing either 8 or 32\% protein as whey protein concentrate or red meat (barbequed kangaroo muscle meat), for 6 weeks. At autopsy, blood was collected to measure plasma glucose, triglyceride, free fatty acids and insulin concentration. Liver and fat pads were removed and weighed.

Outcomes – The high density protein diets reduced energy intake by 19\% (p<0.001) and visceral and subcutaneous fat depots by 23 and 26\% respectively (p<0.001). The 32\% whey protein fed animals lost 10\% more weight than 32\% red meat fed animals (p<0.01). Whey protein fed rats had reduced fasting plasma insulin concentration (p<0.05) and plasma insulin/glucose ratio (p<0.05).

Conclusion - The high protein diet was effective in reducing energy intake and body fat depots. Whey protein (32\%) diet was more effective than red meat in improving insulin sensitivity and reducing body weight gain.