



## Executive Summary

### 3A-105 - The effects of pork on satiety

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Given that more than half of the Australian adult population is either overweight or obese, an evidence base is required to identify foods and meal patterns that contribute to an overall reduction in energy intake. There is increasing commercial interest in the emerging scientific evidence that some foods and/or food components may support weight loss through increased satiety.

Limited evidence from one animal and one human study suggest that pork may have an important role in obesity prevention and weight loss through satiating effects, when replacing other protein foods in a mixed diet. Mechanistically, the short-term regulation of food intake is mediated via neural and humoral signals from the gastrointestinal tract to different regions in the brain. Some studies have demonstrated that consumption of a high-protein diet increases satiety through a decrease in circulating ghrelin (associated with feelings of hunger), and increased concentrations of cholecystinin (CCK) and Peptide Y-Y (PYY) (both associated with satiety). In the longer term, regulation of food intake by hormones such as leptin from adipose tissue and insulin from the pancreas may be significant.

The aim of the present study was to demonstrate that the consumption of a pork meal has a greater effect on acute satiety than comparative meals using animal protein sources, namely beef and chicken.

Thirty non-smoking pre-menopausal women aged 19 - 45 years, with a Body Mass Index range of 19.2 - 38.3 kg/m<sup>2</sup> were recruited for the study. On three test days, fasting participants attended a research centre and consumed, in random order, one of three meat-containing meals (pork, chicken, beef) that were matched in energy (kJ), total protein content, palatability, and appearance. A within-subjects design was employed whereby each participant served as her own control. The primary outcome measures were: (1) amount of food consumed at a subsequent *ad libitum* buffet lunch meal; (2) amount of food consumed and macronutrient selection for the rest of the day; (3) Visual Analogue Scale (VAS) ratings for hunger and satiety; and (4) hormonal appetite and satiety signals.

No difference was found between meat groups for either energy intake, or for macronutrient profile (% energy from protein, fat or carbohydrate) of food consumed at the buffet lunch, following test meal breakfast consumption. Participants also consumed comparable quantities of food over the rest of the day on each of the three test meal days, indicating no test meal effect on later food choice. Subjective VAS scores did not differ between test meals. With the exception of a difference in PYY between chicken and pork meals ( $P = 0.027$ ), no significant differences were found for any of the appetite hormone levels investigated (CCK, ghrelin, insulin) after consumption of pork, beef or chicken.

The study findings add a new marketing opportunity for the pork industry in the context of consumer demands for foods to improve health and wellbeing. In an obesogenic environment where high protein diets are seen to provide opportunity for better satiety and weight loss, this study positions pork in a healthy diet as being equal to lean beef or chicken in terms of its effect on satiety and release of appetite-related intestinal hormones and insulin. Where previously consumers may have only thought of red meat and chicken in terms of these benefits, pork is seen as equally effective.