3B-102*: Effect of long term consumption of Australian pork for weight loss and weight maintenance on cardiometabolic health, food cravings and cognition and psychological wellbeing in overweight/obese individuals with type 2 diabetes*.

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Aims and Objectives

Research shows energy-restricted, low-fat, high pork-protein diets combined with exercise assists with weight loss, cardiometabolic health and glycaemic control in individuals with type 2 diabetes (T2DM). It is unclear whether such diets can sustain these health benefits during subsequent weight maintenance. Nor is it known if pork-protein based diets impact food cravings and cognition. 61 overweight/obese adults with T2DM were randomised to consume either a high pork-protein diet (HPP) (n=32, ~32% protein) or a lower pork-protein diet (LPP, n=29, ~22% protein) for 24 weeks with 150 minutes of moderate intensity exercise weekly for the study duration. There was an initial 12-week, energy-restricted weight loss phase followed by a 12-week, energy-balance weight maintenance phase. The primary outcome was glycaemic control measured by glycosylated haemoglobin (HbA1c). Secondary outcomes included cardiometabolic risk factors (body weight and composition, blood pressure, plasma lipids, glucose, insulin and C-reactive protein), food cravings, cognitive function and well-being.

Key Findings

44 volunteers completed the study. The population was on average 55±8 years and obese (BMI 34±5kg/m^2); had borderline poorly controlled T2DM (HbA1c 8.1±1.4%) with an average duration of disease of 7.2±5.2 years. 75% of volunteers took diabetes medication whilst ~50% were taking cholesterol and blood pressure medication. Dietary and physical activity data indicated participants achieved high compliance to the diet and exercise prescriptions. There were no differences between groups for any outcome measure. Weight loss significantly decreased in both groups during the weight loss phase (~8kg reduction), which was maintained during the weight maintenance phase. Glycaemic control including HbA1c, fasting blood glucose and insulin levels decreased by 1.4%, 2.7mmol/L and 8.6mU/L, respectively, during the weight loss phase in both diet groups and remained stable during the weight maintenance phase.

Cardiometabolic risk factors including blood pressure, insulin resistance, C-reactive protein, plasma total cholesterol, low density lipoprotein cholesterol and triglycerides significantly decreased, and HDL significantly increased, during the weight-loss phase in both diet groups and remained stable during the weight-maintenance phase with the exception of total cholesterol which increased slightly. Over the course of the study the use of diabetes medications decreased for both groups during the weight loss phase and remained stable during weight maintenance whilst lipid-lowering medication was reduced in four volunteers.

Cognitive function remained steady over the course of the study; whilst general health and quality of sleep improved during the weight loss phase. Diabetes related stress, quality of life, vitality and food cravings decreased significantly during the weight loss phase and remained stable during the weight maintenance phase.

This study demonstrates that as part of a lifestyle modification program, both HPP and LPP energy-restricted diets achieve similar weight loss, reductions in cardiometabolic risk factors and improvements in diabetes control. Moreover, these improvements are sustained following subsequent energy-balance when weight loss is maintained. The findings of this study show that lean pork can be safely incorporated as part of a weight management program for T2DM resulting in improved glycaemic control and cardiometabolic health outcomes.

Application to Industry

This randomized controlled trial is considered level II evidence according to the NHMRC, evidence which is likely to be considered for dietary guideline revision and clinical practice. This study is highly relevant to the pork industry as not only is pork an important and nutrient dense protein source, we have provided evidence to alleviate health concerns of higher meat diet. The outcomes here have relevance not only to policy makers, regulatory bodies, the pork industry and consumers but to health care providers including medical practitioners and dietitians, diabetes educators and Diabetes Australia who need to know that lean pork can be safely utilized as part of a weight loss program for T2DM resulting in improved glycaemic control and cardiometabolic health. Thus we have added to the Pork CRC's portfolio in building a credible evidence base to support consumer communication of the health benefits of fresh lean Australian pork which may lead to increased pork consumption.