

3C-102: Inclusion of lupins in the diets of finisher pigs to reduce the level of cholesterol in pork

Project Leaders: Joshua Sweeny and Megan Trezona

Project Participants: Matthew Langridge, Karen Moore, Jae Kim and Bruce Mullan

Aims and Objectives

To investigate the cholesterol lowering effect of lupins in pig diets to further enhance the healthiness of Australian pork.

To determine how the cholesterol lowering effects of lupins compares with that of soy lecithin.

Immunocastrated pigs were fed diets formulated to be low or high in cholesterol (low and high fat) and to contain 7.5 % soy lecithin or 30% lupins between 40 and 95 kg.

Key Findings:

Soy lecithin effectively lowered plasma total and LDL cholesterol levels, however the inclusion of soy lecithin or lupins in finisher pig diets did not significantly lower tissue cholesterol levels. Pork from pigs fed soy lecithin or lupins had a higher PUFA:SFA ratio indicating that lupin fed pigs can produce healthier pork with enhanced nutritional value and fatty acid profile. Inclusion of 30% lupins in the diet increased the PUFA: SFA ratio by 38%-42% in the loin, 23%-44% in the ham and by 25%-49% in belly fat tissue with the greater improvements being achieved in pigs fed the high fat diets. The inclusion of soy lecithin or lupins in finisher pig diets had no negative impacts upon pig growth performance, with the exception of soy lecithin fed pigs, which had lighter LW at Day 42 and lower ADFI (Day 42 and overall). There were also no observed effects of diet type on objective pork quality measurements.

- Lupins can be incorporated into high fat finisher pig diets at levels of up to 30% to supply further advantages other than being a nutrient source for finisher pigs, whereby they can effectively manage the fatty acid profile (PUFA:SFA ratio) of pork to maintain healthier pork product from pigs fed a standard low fat diet.
- Further research, with a larger number of pigs (group housed in a commercial environment) is required to assess whether the inclusion of lupins can effectively lower the cholesterol content of pork when pigs are fed high fat diets.

Application to Industry:

These results have demonstrated that the dietary inclusion of lupins at 30% effectively manages the ratio of PUFA:SFA in the tissue of pigs fed high fat diets without impacting upon performance.

Lupins possess further advantages other than being a nutrient source for finisher pigs and as they are a commonly utilised feed ingredient, this management strategy can be easily adopted to allow producers to use tallow as a concentrated energy source when alternative feed ingredients that possess low energy densities are utilised.