

Project Number & Title

2C-125: Lauric acid, a potentially new feed additive for the Australian pork industry

Project Leader

Professor John Pluske

Project Participants

Murdoch University (Drs Diana Turpin and Sam Abraham), NSW DPI (Dr Alison Collins), The University of Melbourne (Professor Frank Dunshea)

Aims and Objectives

Three experiments were conducted in this project. The overall aim of these studies was to examine the effects of feeding increasing levels of lauric acid (LA; Experiment 1) or monolaurin (MLA, the monoglyceride formed from LA; Experiment II), relative to LA, on aspects of production (especially feed intake), meat quality and faecal bacteriological indices in late finishing pigs. Experiment III examined whether LA (20 g/kg) could have positive health outcomes in finishing pigs infected with *Lawsonia intracellularis*.

Key Findings

The following key findings can be drawn:

- **Experiment I:** increasing levels of LA (0-25 g/kg) fed in the first 7 days after offer showed maximum average daily gain occurring at 11.8 g/kg (~1.2%), and for average daily feed intake from d 7-28, the maximum occurred at 13.4 g/kg (~1.3%). Pigs fed diets LA 15 and LA 20 had a lower FCR during days 7-14 of the experiment. Feeding increasing levels of LA linearly decreased, albeit non-significantly, the proportion of *Streptococcaceae* in the faeces of pigs.
- **Experiment II:** at day 26, after 14 days of feeding, there was a significant Linear effect of feeding MLA on final BW. However, there was no difference (contrast; $p > 0.05$) in BW between feeding LA or the average of the MLA treatments. Modelling the MLA inclusion rate demonstrated that for (a) ADG d 12-26, maximum ADG (1.12 kg/day) occurred at an inclusion rate of MLA of 20 g/kg (2%), and (b) FCR d 12-26, minimum FCR occurred also at an inclusion rate of 20 g/kg (2.4).
- **Experiment III:** pigs fed 20 g/kg (2%) LA under conditions of a *Lawsonia intracellularis* challenge showed a strong statistical trend to shed lower *Lawsonia intracellularis* numbers than control pigs at days 7 and 14 post-infection, and there was a significant interaction between treatment and time with higher *Lawsonia intracellularis* numbers excreted by Control pigs at day 7 post-infection. Furthermore, feeding LA significantly reduced the variation in voluntary feed intake between pigs early in infection and also the feed: gain ratio in mid infection.

Application to Industry

Lauric acid or monolaurin used in late-finishing pigs shows potential application for use in late-finishing Improvac-treated males or female pigs for production gains and (or) amelioration of a *Lawsonia intracellularis* challenge. Further studies should be conducted in commercial facilities to confirm or refute these findings.