



Australasian Pork Research Institute Ltd APRIL

PROJECT SUMMARY

Project Number and Title: 5A-107 *Using algal extracts to improve weaner growth performance and digestibility*

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Aims and Objectives:

To investigate the impacts on pig performance, gut microbial populations and inflammatory markers, the efficacy of a number of algal extracts was evaluated in post-weaning diets. Pigs were fed either a standard weaner diet or a diet designed to be pro-inflammatory (based on higher amounts of soybean meal and a higher n-6-n-3 PUFA ratio), with or without algal extracts. The products of algal extracts may provide a solution to improve post-weaning growth performance and reduce the severity of post-weaning diarrhoea.

Experimental design:

A total of 96 male pigs, weaned at approximately 28 days of age, was randomly allocated into individual weaner pens and assigned to 1 of 8 dietary treatments in a 4 x 2 factorial design. The experiment studied the effects of algal extracts (A, B, A+B vs control) on growth performance, post-weaning diarrhoea, and potentially markers of gut health (microbiome, inflammatory markers) of weaner pigs fed on a conventional diet or a high pro-inflammatory diet (higher soybean meal and n-6-n-3 PUFA ratio).

Algal Extract A was a combination of laminarin and fucoidan at 300 ppm, Algal Extract B was ulva at a concentration of 300 ppm, and Algal Extract A+B was the combination of laminarin and fucoidan extract and ulva at concentrations of 300 ppm each.

Key Findings:

The experiment showed that the use of the algal extracts from brown seaweed or ulva species did not improve growth performance or had any effect on scour score, and thus any major disturbances in the gut were insufficient under the conditions of this experiment to show positive effects. Analysis of the faecal score results indicated that the use of the proinflammatory diet significantly increased the softness of the faeces at both time points (day 10 and 20) following weaning, which might be due to an inflammatory response.

Applications to Industry:

There was no benefit to the utilisation of this algae in the context of this experiment. The combination of the algal extracts did not show any difference in performance or scour score to the individual algal extracts or the control and thus there was interaction between them.

The level of inclusion at 300 g/t of the algal products is relatively low and there is potential to look at the level of algal extract inclusion that is required to influence gut structure and function and potentially growth performance under a wider range of growing (e.g., group-housed pigs after weaning) and environmental conditions that present more of a challenge after weaning.