



Australasian Pork Research Institute Ltd APRIL

PROJECT SUMMARY

Project Number and Title: 5A-117: *Use of an inhibin vaccine to increase litter size in pigs.*

Project Leader: Professor Paul Verma (SARDI and The University of Adelaide).

Project Participants: Dr Tanya Nowland, Dr Bryony Tucker (SARDI), Professor Tim Mahoney (University of Queensland)

Aims and Objectives: To identify new ways to increase litter size, this study explores a vaccine designed to target *inhibin*, a hormone that naturally suppresses egg production in female mammals. Previous studies in sheep and cows showed that blocking inhibin can lead to more eggs being released and, potentially, larger litters. A previous study in pigs showed promise with increased ovulation but didn't look at whether this led to more live piglets being born.

This project aimed to examine the efficacy of an inhibin vaccine produced, on the fecundity of gilts through to farrowing.

Experimental Design: In this study, 44 young female pigs (gilts) were given either the experimental inhibin vaccine or placebo. The pigs received two vaccine doses before breeding, and researchers monitored their health, weight, and reproductive outcomes throughout pregnancy and after birth. Blood samples were also taken to see whether the vaccine successfully triggered an immune response.

Key Findings:

- No significant differences were observed between control and inhibit treated animals for total born and born alive numbers.
- Both immunized and non-immunized had detectable antibodies peaking at day 50.
- Immunized pigs had higher antibody levels at second vaccination, pre-mating, pregnancy confirmation, mid and late gestation and at farrowing crate entry.
- Although initial results suggest vaccinated pigs produce antibodies in response to the vaccine, further analysis reveal these antibodies may have been reacting not to the inhibin itself but to unrelated bacterial proteins used in making the vaccine. This is because the Control group also displayed increased antibody levels.
- The disparity is likely due to *E.Coli* proteins in bacterially expressed antigen.

Applications to Industry: The study suggests that the current form of the inhibin vaccine is not effective at increasing litter size in pigs. It also highlights the need for better methods to ensure the vaccine is targeting the right proteins without interference.

Future research using more specific tools and a refined testing system is underway to assess whether targeting inhibin is a viable strategy for improving pig reproduction.