Australasian Pork Research Institute Ltd APRIL

PROJECT SUMMARY

Project Number and Title: 5A-112 *Novel aspirin supplementation during gestation to improve farrowing rate and piglet birth weight of sows mated in summer*

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Aims and Objectives: Sows mated in summer have a reduced farrowing rate, and the farrowed sows usually produce an increased percentage of born-light piglets with increased carcass fatness at slaughter. These seasonal impacts compromise pig production efficiency and profitability. This research project aimed to evaluate the efficacy of a low dose (240 ppm) of Aspirin supplementation during day 0 to 80 of gestation, as a strategy to improve farrowing rate and piglets' birth weight of sows mated in summer months.

Methods: The research project consisted of two experiments: (1) a safety study, and (2) an efficacy evaluation study. The safety study was conducted in the non-summer months. Sows were fed either a control gestation diet (n=20 sows) or an Aspirin-supplemented gestation diet (n=20 sows; 240 ppm) from day 1 to day 38 post-mating. The main study was conducted on sows that were lactated, weaned, and mated in summer. Sows were fed either a control gestation diet (n=197 sows) or an Aspirin-supplemented gestation diet (n=200 sows; 240 ppm) from day 1 to day 80 post-mating. Plasma samples were collected from day 30 of gestation. The plasma prostaglandin metabolite was measured as a biomarker of prostaglandin synthesis. Progesterone concentration was measured. The number of piglets born alive and stillborn was measured from farrowed sows. Individual piglet birth weight was measured from approximately 50% of randomly selected litters.

Key Findings:
The safety study conducted in the non-summer months showed that Aspirin supplementation did not affect pregnancy rate by day 38, body condition score or observed appetite.

The main study showed that Aspirin supplementation tended to reduce ($P<0.10$) plasma prostaglandin metabolite concentration, by 22%. However, plasma progesterone concentration was not affected. Aspirin supplementation did not affect the farrowing rate (av 70%) and average piglet birth weight (av. 1.3 kg). The farrowing rate and birth weight were lower than the farm records during the non-summer months.

Applications to Industry:
Aspirin supplementation was shown in this study not to be an effective strategy to alleviate summer infertility or fetal growth restriction (as indicated by birth weight) in pigs. The research findings also indicated that the low dose of Aspirin (240 ppm; d 0-80 post-mating) is safe for gestating sows in terms of reproductive performance, and it is a potential strategy to manipulate prostaglandin synthesis in gestating sows for other veterinary or reproductive purposes.