RESEARCH UPDATE

PigNutriStrat

Nutritional and management strategies to improve growth and limit antibiotic usage in pre- and post-weaning pigs

This project is a collaboration between Teagasc, South East Technological University and University College Dublin. This project will investigate a range of strategies, both pre- and post-weaning, to improve pig growth and limit antimicrobial usage.

Background

Pigs face a multitude of challenges around the time of weaning which can result in post-weaning diarrhoea, which is a major concern to the industry. In-feed antibiotics and pharmacological levels of zinc oxide (ZnO) were used in post-weaning diets, to improve gut health and to limit the occurrence of post-weaning diarrhoea. However, the use of ZnO at pharmacological levels is banned in the European Union since June 2022, and access to in-feed antibiotics and antibiotics classified as critically important in human medicine is severely restricted. No single alternative to antibiotics or pharmacological levels of ZnO has yet been found; hence, a multifaceted approach is necessary.

Objectives

To investigate:

1) If split suckling with/without post-partum sow analgesia as a means of ensuring adequate colostrum intake improves lifetime pig health, microbiome and productivity and reduces AMU
2) If provision of supplementary milk to suckling pigs with/without novel non-antibiotic dietary additives improves pre- and post-weaning survival, growth, microbiome and health and reduces AMU
3) If provision of supplementary milk and/or liquid feed to weaned pigs improves post-weaning survival, growth, microbiome and health and reduces AMU

Study 1. Split suckling and post-partum analgesia (pain relief) to increase colostrum intake

We looked at two strategies to ensure all pigs in the litter received sufficient colostrum. The first was split suckling which in our case consisted of removing the six heaviest piglets from the sow for 1 hr to allow the lightest piglets suckle, at 4 hrs after onset of parturition. We repeated this process again 1.5 hrs later. The second strategy involved administering pain relief (Meloxicam; Loxicom® Injection, Norbrook, Ireland at 0.4 mg/kg of live weight) to sows as soon as possible after the placenta was delivered. The idea here was that administration of pain relief to the sow would facilitate greater suckling by the pigs.

Split suckling had no effect on piglet intake of colostrum; however, administering pain relief to the sows increased colostrum intake per pig (by 18g/pig/day). This increase in colostrum intake was sufficient to lead to an increase in average piglet weaning weight of 350 g when pigs were weaned at ~26 days (Figure 1). The quantity of antibiotics administered per piglet was reduced by ~50%, while that of anti-inflammatories was reduced by ~55% (Figure 2). On the other hand, split suckling had little or no effect on the volume of injectable medicines administered.

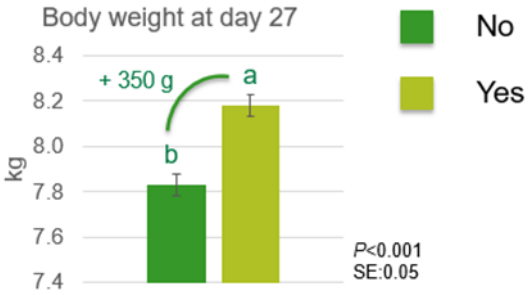

Figure 1. Effect of analgesia (pain relief) in sows on average piglet weaning body weight

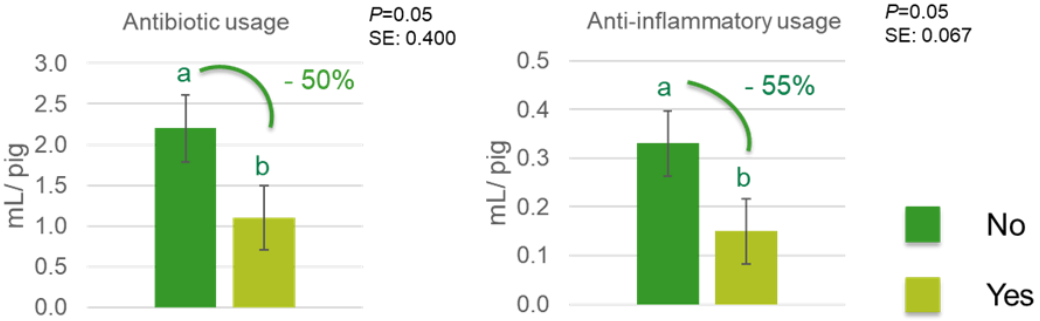

Figure 2. Effect of pain relief in sows on the volume of antibiotics and anti-inflammatories administered per piglet.

Study 2. Supplementary milk, solid creep feed and a mixture of milk and liquid feed for suckling pigs to improve growth and limit antimicrobial usage.

In this trial, the aim was to compare the effect of providing supplementary milk, solid creep feed and a mixture of milk and liquid feed to suckling pigs on piglet growth and antibiotic usage pre-and post-weaning. Growth data and medication usage were recorded from birth to slaughter. Data analysis is on-going.

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Prior to joining the project in 2020, Elisa obtained a degree in Agronomy engineering specialising in Animal production from Agrocampus Ouest in France. She also has 2 years of professional experience in the feed additive industry.

Take home message

- Administering pain relief to sows as soon after delivery of the placenta as possible, will increase colostrum intake and weaning weight and reduce the necessity to use medication in piglets.
- Split suckling, as conducted in our study, reduced piglet weaning weight and did not affect medication usage per piglet prior to weaning.