

## **ISME18 Lausanne 14-19 August 2022**

**Topic: Animal microbial ecology**

**Title: Intestinal microbiota of farm monogastric animals bred with innovative nutritional solutions**

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Weaning is a critical transition phase for health of farm monogastric animals and often requires antibiotic treatments. To limit the spreading of antimicrobial-resistant microbes and improve the digestive comfort of reared animals during weaning, different nutritional solutions were tested. This study aims to investigate the effect of Ca-butyrate, chestnut tannins, and Nutriose® and their combinations on weaned piglets' growth and gut health by intestinal microbiota analysis.

Two consecutive test rounds each involving 192 weaned piglets (6 piglets per pen) were conducted. Piglets were divided into six groups receiving the different combinations of the nutritional solutions tested and one control group. Piglets' weight and mortality rate were recorded all along the study as well as the individual antibiotic treatments, if any. By excluding piglets treated with antibiotics, a total of 694 fecal swabs was collected by sampling 2 pigs per pen at arrival, on day 14 and day 31 for subsequent targeted metagenomic analysis.

At the end of the study, piglets of the control group showed the highest mortality rate (~15%) compared to groups with nutritional solutions. Among supplemented piglets, only those receiving Ca-butyrate presented no mortality. Surprisingly, the group supplemented with the combination of Ca-butyrate, tannins, and Nutriose® had the highest weight but also one of the highest mortality rates (~12%).

Combined microbiota data with zootechnical results will give insights into the impact of the nutritional solution in improving weaned piglets' health and gut bacterial composition balance.