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EFFECT OF EARLY-LIFE FORAGING IN DEVELOPMENT OF PIGLETS

R. Choudhury¹, A. Middelkoop², W.J.J. Gerrits³, B. Kemp², J.E. Bolhuis², M. Kleerebezem¹

¹Wageningen University & Research, Host Microbe Interactomics- Animal Sciences, Wageningen, The Netherlands

²Wageningen University & Research, Adaptation Physiology Group- Animal Sciences, Wageningen, The Netherlands

³Wageningen University & Research, Animal Nutrition Group- Animal Sciences, Wageningen, The Netherlands

Backgrounds

Early-life and weaning are associated with dynamic changes of the gut microbiome in pigs. Early-life microbiome development is driven by exogenous (e.g., diet and environment) and endogenous (host derived) factors, and importantly modulates host physiology, which can persist throughout life. In nature, piglets start to forage with the sow already a few days after birth.

Objectives

Here, we aim to determine the effect of early-life foraging (pre-weaning access to solid feed) on growth, development and behaviour of piglets, their gut microbiome composition, and intestinal physiology.

Methods

Piglets were followed from birth until 6 weeks of age, and various samples (rectal swabs, blood, saliva, etc.) were collected at multiple time points. Next to the sow's milk, the treatment group was provided with a customised fibre-rich early-foraging diet from 2 days after birth, whereas the control group was only drinking sow milk. Physiological and behavioural measurements were collected during the pre- and post-weaning period. During the same period rectal swabs were collected to investigate community structure of the intestinal microbiome by 16S rRNA gene analysis. Moreover, a subset of piglets was sacrificed at weaning (at 28 days of age) and intestinal samples were collected, allowing the differential analysis of histological and molecular parameters in the experimental versus the control group.

Conclusions

By integrative data analysis, the study intends to provide insight into the relationship of early-foraging with pigs' welfare, health, and development. This knowledge can lead to sustainable husbandry regimes that mimic natural conditions for the production of healthier and more resilient pigs.