MIS-PP-03

TITLE
MICROBES ARE MORE THAN JUST PATHOGENS

Lisanne Verschuren[1], Dirkjan Schokker[2], Egbert Knol[1], Marc Martens[1], Rob Bergsma[1], Mario Calus[3]

[1] *Topigs Norsvin Research BV*
[2] *Wageningen Livestock Research*
[3] *Wageningen University & Research*

CONTENT

Background and Objectives

Microbiota not only play a role in diseased animals but also influence production results in healthy animals. Our study investigated the association between fecal microbiota, fecal nutrient digestibility and performance traits in healthy commercial grower-finisher pigs.

Material & Methods

A total of 142 three-way crossbred grower-finisher pigs were fed either a diet based on corn/soybean meal or wheat/barley. Fecal samples were collected on the day before slaughter. The samples were used to determine fecal digestibility of several nutrients by using wet chemistry, and their microbiomes were profiled by sequencing the 16S hypervariable ribosomal DNA regions. We estimated microbiability, which is the percentage of the variation in fecal nutrient digestibilities and performance traits that was associated with fecal microbiota.

Results

Microbiability was higher than 50% for most of the fecal nutrient digestibilities and was as high as 93% for crude protein digestibility. The performance indicators had lower microbiabilities, with a value of 43% for feed intake and 28% for average daily gain, and had large standard errors. Surprisingly, feed conversion ratio had a microbiability of 0.

Discussion & Conclusion

Microbiability of nutrient digestibilities, feed intake and average daily gain were higher than our own estimates of the heritability of these traits. Therefore, fecal microbiota composition is possibly more predictive than genetics of the pig for fecal nutrient digestibility, average daily gain and feed intake. In conclusion, specific individual microorganisms can be pathogens but the collective populations of microbiota are important contributors to a good performance in healthy pigs.