The microbiota of pigs influenced by diet texture and severity of Lawsonia intracellularis infection

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Pigs with and without naturally occurring Lawsonia intracellularis infection were fed diets with different texture. In a previous study from 79 pig herds using a similar feeding on pelleted or non-pelleted form showed that the non-pelleted diet was associated with a reduced prevalence of L. intracellularis. In this study a mechanistic approach was taken for explaining and testing this observation by studying the microbiota and the occurrence of L. intracellularis in the distal ileum of 54 pigs by terminal restriction fragment length polymorphism (T-RFLP) analysis, Real-Time PCR and in situ hybridization. The texture of the diet influenced the microbiota, and from a quantitative discriminative analysis of the terminal restriction fragments (T-RFs) of ileum samples it was deduced that Clostridium spp. and Lactobacillus spp. were associated with the non-pelleted diet and Streptococcus spp. with the pelleted diet. In experimentally infected pigs it was verified that 89 bp and 90 bp sized T-RFs (HhaI) from ileum represented L. intracellularis. The non-pelleted diet seemed to reduce the relative amount of L. intracellularis in the total microbiota of the ileum, but the number of pigs detected positive with L. intracellularis by Real-Time PCR was not influenced. The five pigs with highest L. intracellularis content showed T-RFs that were not present in profiles from less or noninfected pigs, which may indicate that some bacterial species were associated with L. intracellularis infection.

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