Within-day repeatability for absolute quantification of Lawsonia intracellularis bacteria in feces from growing pigs - DTU Orbit (29/12/2018)

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Absolute quantification of Lawsonia intracellularis by real-time polymerase chain reaction (PCR) is now possible on a routine basis. Poor repeatability of quantification can result in disease status misclassification of individual pigs when a single fecal sample is obtained. The objective of the current study was to investigate overall variation within a day for fecal numbers of L. intracellularis bacteria determined by real-time PCR in growing pigs. From each of 30 pigs with an infection of L. intracellularis, 5 fecal samples were collected within 1 day. A total of 150 fecal samples were obtained and subjected to quantitative PCR (qPCR) testing. Mean fecal dry matter content was 14.3% (standard deviation = 4.5%). Two pigs (6.7%) alternated between being L. intracellularis qPCR positive and negative. For 28 pigs, the excreting levels of L. intracellularis were within the dynamic range of the qPCR assay at all sampling points. For these 28 pigs, the mean excretion level of L. intracellularis was 6.1 log10 bacteria/g feces (standard deviation = 1.2 log10 bacteria/g feces). The maximum observed difference between 2 fecal samples from the same pig was 1.1 log10 bacteria/g feces. The average standard deviation for individual pigs was 0.27 log10 bacteria/g feces. The average coefficient of variation within pigs was 0.04, ranging from 0.006 to 0.08. The results imply that absolute quantification of L. intracellularis by qPCR has acceptable repeatability within 1 day. However, a population-specific proportion of pigs alternating between positive and negative test results must be expected.

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