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TITLE

IDENTIFICATION OF ILEAL MALABSORPTION USING CONCENTRATIONS OF SERUM HOMOCYSTEINE IN PIGS WITH LAWSONIA INTRACELLULARIS-INFECTION

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CONTENT

Background & Objectives

About 96% of the herds worldwide are infected with *Lawsonia intracellularis* and resulting lesions originating from the ileum. The majority of vitamin B12 is absorbed at the ileum and a lack on the cellular level leads to increased serum homocysteine (HCY) concentrations in pigs. The aim was to investigate the potential utility of serum HCY concentrations for the identification of ileal malabsorption in pigs with *L. intracellularis*-infection.

Material & Methods

Forty pigs were randomly assigned to two groups: vaccinated or not against *L. intracellularis* (3 weeks of age), challenged with *L. intracellularis* (7 weeks of age) and necropsied (10 weeks of age). Serum samples (week 3, 7, and 10) and fecal and tissue samples (10 weeks of age) were collected. For all pigs, variables (diarrhea score, fecal *L. intracellularis*, *L. intracellularis* antibody titer, ileum mucosa-PCR, ileum post-mortem score, immunohistochemistry score and average daily weight gain [ADWG]) were evaluated or determined. Serum HCY concentrations were compared between the two groups of pigs. Correlation analyses were performed between serum HCY concentrations and the seven variables for all pigs and separately for vaccinated and unvaccinated pigs.

Results

Serum HCY concentrations differed significantly after the challenge between the two groups of pigs ($p < 0.05$), with higher serum HCY concentrations for the vaccinated pigs. All variables, except serum *L. intracellularis* antibody titer, showed a correlation when compared to HCY concentrations (for all: $p < 0.05$). Unvaccinated pigs showed a positive correlation between diarrhea score, fecal *L. intracellularis*, ileum post-mortem score, and ADWG when compared to HCY concentrations (for all: $p < 0.05$).

Discussion & Conclusion

Serum HCY concentrations differ in vaccinated and unvaccinated pigs after a challenge with *L. intracellularis*. The decrease of serum HCY concentrations in unvaccinated pigs could be explained by incorporated HCY into proteins as shown in humans and animals with protein-losing-enteropathy.