WELFARE & NUTRITION

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UROLITHIASIS IN FINISHING PIGS IS ASSOCIATED WITH COMPOSITION OF FEED AND DRINKING WATER

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Introduction

A previous study investigated crystalluria and urinary calculi in fattening pigs on fifty farms in Belgium. Microscopic examination revealed struvite as the most common crystal component (30% of the urine samples). Macroscopically stones and grit were detected in 7% of the samples. The composition of the stones was frequently mixed but always with involvement of calciumoxalatedihydrate (COD). The present study identified risk factors for developing urolithiasis with the overall aim to gain insight in the pathogenesis of the condition.

Material and methods

On the selected farms, feed and water samples were collected and subjected to chemical analysis. Also, information about management, nutrition and feeding schemes, drinking water quality and supply was collected using a questionnaire. For microscopic struvite and COD stones, a separate multivariable grouped logistic regression model was built in a stepwise forward manner to model the probability of the microscopic detection of struvite or COD.

Results

The presence of COD was negatively associated with the flow rate of the nipple drinker and the copper content in the feed, while a positive association was noticed with the chloride and phosphorus content of the feed, the manganese content of the drinking water and the presence of enterococci in the drinking water.

Struvite crystals tended to be more frequently detected in winter than in spring. A negative association was found with the potassium, calcium and fluoride content of drinking water and a positive association was observed with the iron content in the feed.

Discussion and conclusion

Several risk factors for crystalluria and urinary calculi were identified. It was shown that sufficient water intake by means of a good flow rate of the nipple drinkers is primordial for a high urine volume with a decreased tendency for crystalloid precipitation.