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Short communication

Influence of humic acids as a feed supplement on the health status of suckling piglets

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Introduction

Over the last decades, antimicrobial additives in livestock feed are used as growth promoters for increased weight gain and better feed conversion. Additionally, they decrease the risk for disease occurrence in the livestock herds. Therefore, antimicrobial feed additives have an economic role in livestock production for optimization of nutritional strategies to generate profit (; Gropp et al., 1992; Hays, 1981). The most used antimicrobial feed additives are antibiotics, but recently their uncontrolled use in livestock production lead to bacterial resistance, including pathogens that cause diseases in humans and animals. For that reason, nowadays antibiotics are more perceived as a risk than are growth promoters in livestock production. One of the alternatives for the replacement of antibiotic use as feed supplements (antibiotic-free range) is humic acids, which are widely used in broiler production, and recently their use is expanded in pig production (Ceylan и Ciftci, 2002).

Humic acids are defined as a group of organic acids naturally contained in the humus. They originated from the decomposition of organic substances, especially plants in the soils (Islam et al., 2005; Vetvicka et al., 2010; Kaevska et al., 2016). The use of dietary natural humic acids as feed supplements in swine production is increasing the expectations for the better health status of herds as a result of immunological system stimulation and their antibacterial and antiviral effects.

Until now, there are huge gaps in knowledge of the biological effect of humic acids in animals. The main aim of the performed survey was to evaluate the effect of natural humic acids used as feed additives on health records in piglets.

Materials and Methods

During the survey, there were followed 26 pregnant and latter farrowed sows together with their litters, divided into two groups, 12 of them belonged to the control group and 14 in the test group. In the test group, one month before the expected farrowing of sows (late gestation) to wean, a commercial feed supplement from dietary humic acids was given. In the period from one week after birth until weaning, the stillborn piglets in the test group were also supplemented with natural humic acids suspension through the drinking water. During the survey, independently from the group, there were followed reproductive and health performances in sows, as well as productive and health records in piglets. Statistical analyses were conducted in SPSS for Windows. The correlations between variables in the model were calculated by Pearson's coefficient of correlation. Data analysis was carried out by General Linear Model, a univariate approach, for the influence of factor variable as an output of diet regime with humic acids as feed supplement on the prevalence of health disorders in piglets.

Results and discussion

The piglets' loss in the suckling period from birth to weaning in the control group was 22.62%, while the loss of piglets in the test group was 17.19%. The proportion of dead piglets until weaning versus the number of piglets born alive, in the control group was 8.45%, while in the test group was 3.65%, but without a statistically

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significant difference. Depending on the sow's dietary treatment, there did not find statistically significant differences in reproductive performances between the groups.

The prevalence of diarrhea in litters and the prevalence of diarrhea in piglets were higher in the control group than in the test group (33.33% and 14.08% respectively vs 21.43% and 3.03% respectively). On average, diarrhea occurred 11,29±2,254 days after the birth of the piglets.

The prevalence of coxofemoral dysplasia and distortion in piglets from the control group was 2,11% and 5,63%, respectively. There wasn't recorded coxofemoral dysplasia and distortion in piglets from the test group. On average, the coxofemoral dysplasia and distortion in piglets occurred 1,33±0,333 days and 15,83±2,701 days after the birth of the piglets, respectively.

There was found a statistically significant positive correlation ($p<0.01$) between the occurrence of coxofemoral dysplasia and distortion in piglets from the control group. The diet type had a statistically significant influence ($p<0.01$) on the piglet's age when the distortion occurred.

The humic acids have positive effects on the immune system and help to get a better response to infective diseases (Kunavue et al., 2012). For the prevention and treatment of diarrhea, indigestion, and acute poisoning in pigs, some authors recommend the addition of organic acid-based solutions, including humic acids, to food and drinking water (Kaevska et al., 2016; Liu et al., 2018; Václavková et al., 2019).

Conclusion

The balanced sow's diet in the most sensitive period from farrowing to wean is of great importance for obtaining improved reproductive and health performances in sows, as well as productive and health performances in piglets.

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