Influence of using avilamycin, colistin, halquinol and probiotics on performance and occurrence of diarrhea in weaned piglets

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Introduction

Post-weaning diarrhea (PWD) is a disease related to economic losses in weaning piglets (1,3) and the use of antibiotics are usually necessary to avoid or control PWD. However, there is a worldwide trend towards a better use of antimicrobials, encouraging the reduction of critically important antibiotics (8).

Avilamycin is an antibiotic used only in veterinary medicine that acts reducing the amount of *E. coli* fimbriae and consequently reducing the adhesion process in the intestinal lumen (2,5). Moreover, some probiotics can produce antimicrobial compounds that inhibits the production of bacterial toxins or the adhesion of pathogens to the intestinal mucosa (4,7). These two technologies have been shown to be effective in PWD control at field level. For these reason, this study was conducted to compare the performance of piglets fed diets containing critically important antibiotics currently used in Brazilian pig production (colistin and halquinol), compared to an antibiotic for exclusive animal use (avilamycin) and a multistrain probiotic.

Materials and Methods

Three hundred weaned piglets (6.026 ± 0.971 kg) were randomly assigned (30 pens of 5 pigs) to one of six feed treatments under environmental challenge: non-medicated feed during 42 days (T1); avilamycin 80 ppm for 28 days followed by non-medicated feed until 42 days (T2); colistin 200 ppm for 28 days followed by non-medicated feed until 42 days (T3); halquinol 120 ppm for 28 days, followed by non-medicated feed until 42 days (T4); probiotic (200 g/t) composed by *L. plantarum, L. bulgaricus, L. acidophilus, L. rhamnosus, B. bifidum, S. thermophilus* and *E. faecium* for 42 days (T5); and avilamycin 80 ppm for 28 days plus probiotic (200 g/t, same described above) during 42 days (T6). Piglets were individually weighed weekly and at every feed changes. It was analyzed the daily feed intake, weight gain and feed conversion (pen as experimental unit) per week and from the entire experimental period. Diarrhea score was assessed daily according to the following classification: 0 - normal consistency; 1 - semi-solid; 2 - pasty; 3 - aqueous. Parametric data were submitted to ANOVA and averages to Tukey test, and Nonparametric data were assessed using the Chi-square test.

Results

Significant (P <0.001) findings include higher final weight in nursery piglets treated with either avilamycin (20.863 kg), probiotic (21.571 kg), or avilamycin + probiotic (21.363) (considering week factor), compared to colistin (19.689 kg) and no difference to control (20.811 kg) or halquinol group (20.489 kg). In addition, feed conversion on first week was better for avilamycin 80 ppm and avilamycin + probiotic compared to colistin 200 ppm (P <0.001). Avilamycin 80 ppm and probiotic (200g/t) treatments had a higher number of animals over 22 kg at the end of nursery compared to colistin 200 ppm (P <0.001), and without difference (P >0.001), for control, halquinol 120 ppm and avilamycin + probiotic. Diarrhea occurrence in treatments T1, T2, T4 and T6 were significantly reduced compared to T3 and T5 (P <0.001) and the lowest score of diarrhea was found in group T6, followed by group T2, followed by groups T1 , T3, T4 and T5 (P <0.001) (Table 1).

Conclusions and Discussion

Weaned piglets who received avilamycin 80 ppm or avilamycin + probiotic showed better results than animals receiving colistin 200 ppm for: final weight, feed conversion on first week, number of piglets over 22 kg at the end of nursery (T2 only), and occurrence and score of diarrhea. However, there were no differences among the control group, the group with halquinol or the group with probiotic only. Some studies using avilamycin 80 ppm found higher body weight at 28 post-weaning, lower occurrence and score of diarrhea relative to a non-medicated feed (2,5). The results of our study demonstrated that avilamycin, multistrain probiotic or its combination had better results than colistin 200 ppm.

Table 1. Diarrhea occurrence and average score

Treatment	Occurrence*	Score*
Non-medicated	1.3a	0.08a
Avilamycin 80ppm	1.0a	0.07b
Colistin 200ppm	1.5b	0.09c
Halquinol 120ppm	1.2a	0.07c
Probiotic 200g/t	1.5b	0.12d
Avilamycin 80ppm + Probiotic 200g/t	0.7a	0,05a

*Statistical difference on Chi-Square test (P <0.05)

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