

COMPARATIVE EFFICIENCY OF TIAMULIN AND DIMETRIDAZOLE IN CONTROLLING SWINE DYSENTERY

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Abstract

The purpose of this study was to evaluate the comparative efficiency of Tiamulin and Dimetridazole for treating and controlling swine dysentery. The growing performance was evaluated. Levels of average daily weight gain revealed significant differences ($P < 0.0001$) between Tiamulin and Dimetronidazole. We found strong positive correlation of the average daily gain and treatment with Tiamulin ($P < 0.0001$) and coefficient of determination ($P < 0.001$). For Dimetridazole, the correlation coefficient and the coefficient of determination have low values ($P = 0.006$).

Key words: *comparative efficacy, dimetridazole, piglets, tiamulin.*

INTRODUCTION

Piglets are susceptible to gastrointestinal disorders and digestive disturbances as a result of their immature digestive system. An effect of this is an increase in the prevalence of post-weaning scours, which leads to retarded growth, increased mortality, and additional medical costs. Antibiotic prophylaxis is one of the management methods of gastrointestinal problems. Tiamulin hydrogen fumarates are a semi-synthetic derivative of the diterpene antibiotic pleromutilin. Products based on tiamulin hydrogen fumarates have good activity against Gram-positive bacteria, mycoplasmas, anaerobes, spirochet, and Gram-negative pathogens. Dimetridazole is an antihistomonal drug traditionally used for prevention and treatment of haemorrhagic enteritis in pigs.

The purpose of this study was to evaluate comparative efficiency of tiamulin versus dimetridazole in development of clinical signs of infective enteritis in piglets. Tiamulin and Dimetridazole are not recognized as factors involved in raising piglets, therefore we sought to determine the confidence interval for the mean unknown average daily gain, corresponding to piglets affected by infective enteritis and treated with Tiamulin or Dimetridazole.

MATERIALS AND METHODS

Forty weaned piglets aged 4–5 weeks and weighting from 6–10 kg, healthy or showing clinical signs of gastrointestinal disease (poor growth, diarrhea) were equally divided into four groups: T group which received five consecutive days tiamulin, soluble granules added to the drinking water (60 mg per liter), D group which received five consecutive days dimetridazole insoluble powder feed medication (added 25 mg/kg bw), M group that not treated and S group, healthy piglets. Clinical observations were made over a period of 15 days, registering individual body weight.

A Fisher's Exact test was used to assess coefficients of variation of the individual body weight and differences between treatment groups, while ANOVA was used to analyze productivity data. Significant differences were considered when $p < 0.05$. Linear regression was used to analyze connection between initial body weight and average daily gain.

RESULTS AND DISCUSSIONS

After Tiamulin drinking water medication and Dimetridazole feed medication was initiated for the T and S group piglets, within 5 days the clinical signs of gastrointestinal disease has decreased. Piglets were not treated (M group) showing clinical signs (Figure 1).

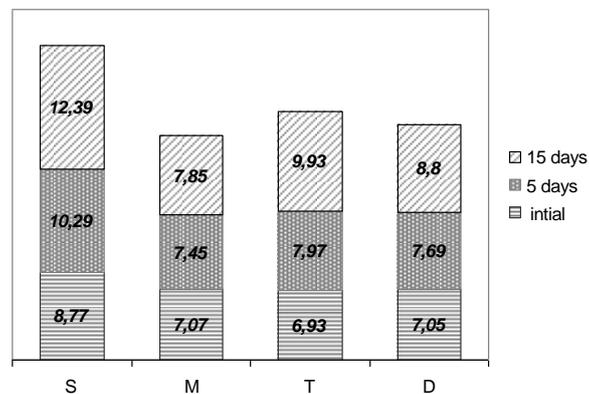


Figure 1. Dynamics of average piglet weight (kg) for the four groups.

Average daily weight gain (ADG) was also significantly greater ($P < 0.05$) in the groups with antibiotic treatment compared with the untreated animals: T

group 199.8 ± 11 g and D group 116.6 ± 30 g vs. M group 51.8 ± 12 g (Figure 2).

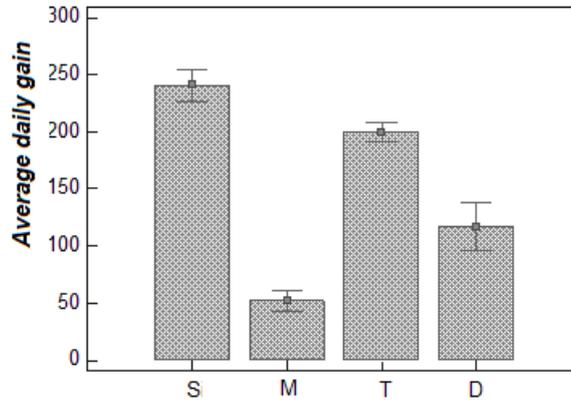


Figure 2. Dynamics of average daily weight gain (ADG, g) for the four groups.

Very good positive correlations of the average daily gain and treatment with Tiamulin and significantly coefficient of determination ($P < 0.001$) were found.

Linear regression analysis (Figure 3) indicated only 44% of ADG is determined by the linear relationship with weight piglets the first day ($P=0.03$).

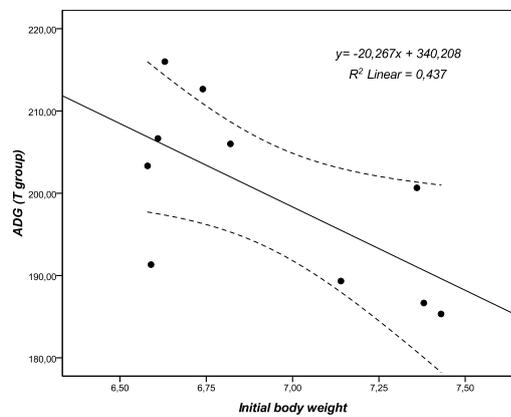


Figure 3. Representation of linear regression for T group.

To determine a 95% confidence interval, ADG values recorded were compared to groups T and D with characteristic value ADG 250 g / day

healthy piglets of the same age and weight. For Tiamulin, 95% confidence interval determined is [191.92 g/day – 207.67 g/day]. For Dimetridazole, 95% confidence interval determined is [95.25 g/day – 137.94 g/day].

CONCLUSIONS

The clinical signs of gastrointestinal disease were decreased after Tiamulin medication and Dimetridazole were initiated, within 5 days.

Average daily weight gain was significantly greater in the group with Tiamulin treatment compared with Dimetridazole treatment and the untreated animals.

Very good positive correlations of the average daily gain and treatment with Tiamulin and significantly coefficient of determination were found.

Approximately half of the ADG is determined by the linear relationship with weight piglets the first day.

The results of our experiment confirm the high effectiveness of Tiamulin in drinking water in treating and controlling the clinical, pathological, and negative productivity, main effects of enteritis in piglets.

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MULTILINEAR CAPACITY ASSESSMENT OF MOUSE MESENCHYMAL STEM CELLS