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Dose Determination Trial for Lincomycin in the Control of Porcine Proliferative Enteropathy

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In a previously reported trial lincomycin in the feed at 200 g/T was shown to be effective in treating porcine proliferative enteropathy (PPE) caused by *Lawsonia intracellularis* (LI).¹ The trial reported here was designed to determine the effective dose when lincomycin was included in the feed prior to challenge.

Materials and methods One hundred thirty castrated male pigs 4-5 weeks old were assigned to 5 weight blocks. Within the weight blocks, the pigs were assigned to 5 pens and 5 different treatments were applied, one to each pen beginning at day (-4). The treatments were as follows:

- Group 1 - non-medicated feed
- Group 2 - Lincomycin at 20 g/T
- Group 3 - Lincomycin at 40 g/T
- Group 4 - Lincomycin at 100 g/T
- Group 5 - Tylosin at 100 g/T.

On day 0 and 1 all pigs were challenged with split doses of a mucosal homogenate titrated to contain 1.2×10^8 cfu of LI per pig and 10 mg/kg BW prednisolone acetate to enhance development of disease. The homogenate was tested for *S. hypo-dysenteriae*, *S. pilosicoli*, *S. choleraesuis*, and hemolytic *E. coli* and found negative.

Results and Discussion In this challenge model study, the challenged pigs were successfully infected with LI as confirmed by demonstration of the organism in tissue sections at necropsy and by PCR detection of LI in feces from infected pigs. Assays of the feed for lincomycin content showed that the feed theoretically containing 20 g/T (22ppm) actually contained only 4 ppm so the data was excluded from the decision making process. The severity of the challenge is indicated by the mortality in the control group in Table 1.

Table 1. Ileitis Related Mortality

Gr	Wk 1	Wk 2	Week 3	Week 4	Wk 5	Cumulative
1	0	0	4(16%)	8(32%)	1	13(52%)
2	0	0	2(8%)	0	5	5(20%)
3	0	0	0	1(4%)	1	1(4%)
4	0	0	2(8%)	0	2	2(8%)
5	0	0	3(12%)	1(4%)	4	4(16%)

All groups receiving medicated feeds had significantly reduced mortality ($p < .05$) compared to the control. Average daily feed intake (AFDI), average daily gain (ADG), and gain/feed (G/F) were also evaluated. The performance results are shown in Table 2.

Table 2. Performance parameters

Grp	AFDC g/day	ADG g/day	G/F
1	477	95	0.18
2	509*	182**	0.35**
3	577**	232**	0.39**
4	573**	241**	0.42**
5	527	168*	0.32*

* $p < .05$, ** $p < .01$

Pigs fed lincomycin at 40 g/T and 100 g/T showed significant improvement in ADFI, ADG, and G/F over those fed non-medicated feed. Pigs fed tylosin showed no improvement in ADFI over the non-medicated controls.

Conclusions This challenge model study demonstrated that lincomycin at 100 g/T and 40 g/T performed similarly on the measured parameters and appear to be on the plateau of the dose-response curve dose plateau. Further studies to confirm the dose are underway.

Reference N. Winkelman, C. Gebhart, and C. Cornell, 1998 Proceedings American Association of Swine Practitioners, p. 195