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APRAMYCIN FOR THE EARLY-WEANED PIG

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Summary

A total of 108 21-day-old pigs, weighing less than 10 lb, were utilized in two, 28-day trials to compare the effects of feeding high nutrient-density diets with either added apramycin, neomycin, or carbadox on pig performance. In Trial 1, pigs fed the diet containing Apralan® gained slightly faster and were more efficient (P<.05) than pigs fed neomycin during the first 14 days postweaning. There were no differences in pig performance in Trials I or II for the entire 28-day period. Two additional 28-day on-farm studies using a total of 427, 21-day old pigs were conducted, feeding a high nutrient-density diet medicated with either apramycin or neomycin plus terramycin. In both on-farm trials, pigs fed apramycin gained faster (P<.05) than pigs fed neomycin plus terramycin for the initial 14 days postweaning. In the second on-farm trial, feed intake was higher (P<.09) during the first 14 days for pigs fed apramycin. Additionally, pigs fed diets medicated with apramycin were slightly heavier (1.7 and 1.5 additional pounds for the first and second on-farm trials, respectively) at 28 days postweaning compared to pigs fed neomycin plus terramycin. These results indicate that apramycin will improve the performance of early-weaned pigs fed high nutrient-density diets compared to other feed medications.

Introduction

During the last 3 years, Kansas State University has conducted numerous studies evaluating the practical application of high nutrient-density diets for the early-weaned pig. Therefore, the objective of this study was to compare Apralan® to either neomycin, neomycin plus terramycin, or Mecadox® when added to high nutrient-density diets and fed to pigs weaned at approximately 21 days of age. Apramycin (Apralan®) belongs to the amino glycoside group of antibiotics that includes streptomycin, neomycin, spectinomycin, and gentomycin. These antibiotics have been shown to be effective in reducing the incidence and severity of scours by inhibiting E. coli in the intestine of the pig immediately following weaning. Apralan® has recently been approved at an inclusion rate of 150 g per ton of complete feed for 2 weeks immediately postweaning.

Experimental Procedures

Two trials were conducted to evaluate Apralan® in diets for pigs weighing less than 10 lb at weaning. In Trial I, the smallest 60 pigs from a weaning group were allotted to 12 pens with 5 pigs per pen. The pigs averaged 7.1 lb, with a range of 5 to 8 lb. Pigs within pens were assigned randomly to a high nutrient-density diet (Day-14®) containing either Apralan® (150 g/ton) or neomycin

(140 g/ton).

In Trial II, the smallest 48 pigs from a weaning group were allotted to 12 pens with 4 pigs per pen. The pigs averaged 8.1 lb, with a range of 5 to 9 lb. Pens were assigned randomly to an early weaning pig starter diet (Day-14®) containing either Apralan® (150 g/ton), neomycin (140 g/ton), or Mecadox® (50 g/ton).

In both trials, pigs were fed the high nutrient-density diet for 14 days and then fed a 20% whey, 1.25% lysine, corn-soybean meal diet medicated with Mecadox® from day 15 to termination of the study on day 28 postweaning.

Two trials were conducted on a commercial swine farm in Kansas, using 180 pigs (6 pens/trt) in Trial III and 247 pigs (8 pens/trt) in Trial IV. Pigs were fed a high nutrient-density diet (HNDD, Early Wean®) for 2 wk containing either Apralan® (150 g/ton) or neomycin plus terramycin (140 + 100 g/ton). From day 15 to day 28 of the study, pigs were fed a 15% dried whey, 5% fish meal, 1.25% lysine, milo-soybean meal diet medicated with ASP-250®.

Results and Discussion

The results of Trial I are given in Table 1. Pigs fed the diet containing Apralan® gained slightly faster and were more efficient ($P<.05$) than pigs fed neomycin for the first 14 days. For the entire 28-day trial, there were no differences in pig performance.

In Trial II, there were no significant differences in average daily gain or feed efficiency between treatments for the first 14 days postweaning (Table 2). However, pigs fed Apralan® grew slightly faster and were more efficient than pigs fed neomycin or Mecadox®. These results are similar to those of Trial 1. There were no differences in pig performance from dietary treatment for the entire 28-day trial.

The results of the two on-farm trials are shown in Tables 3 and 4. In both on-farm trials, pigs fed Apralan® gained faster ($P<.05$) than pigs fed neomycin plus terramycin for the first 14 days postweaning. The performance of pigs in both trials was very similar. Pigs fed Apralan® ate slightly more feed in Trials III and IV ($P<.09$) during the first 14 days postweaning. Pig performance from day 14 to 28 postweaning and for the entire trial was not different between dietary treatments. However, pigs fed Apralan® were heavier at the conclusion of Trials III and IV (1.7 and 1.5 additional pounds, respectively) compared to those fed neomycin plus terramycin. Thus, Apralan® appears to be an effective growth promotant for pigs weaned at 21 days of age.

Table 1. Apralan® vs Neomycin for Weanling Pigs (Trial I)[a]

Criterion	Treatment	
	Apralan® 150 g/ton	Neomycin 140 g/ton
Day 0 -14		
Daily gain, lb	.52 ± .09	.48 ± .08
Daily feed, lb	.42 ± .08	.42 ± .06
Feed/gain[b]	.82 ± .03	.88 ± .05
Day 14 - 28		
Daily gain, lb	.72 ± .15	.69 ± .09
Daily feed, lb	1.25 ± .17	1.21 ± .13
Feed/gain	1.78 ± .31	1.78 ± .15
Day 0 -28		
Daily gain, lb	.62 ± .12	.58 ± .08
Daily feed, lb	.84 ± .12	.82 ± .09
Feed/gain	1.37 ± .15	1.41 ± .06

[a]Each value is the mean ± standard deviation for 6 pens per treatment, average initial wt 7.1 lb. After the initial 14-day trial, all pigs were fed a diet medicated with Mecadox® from day 15 to day 28.

[b]Treatments differ, ($P<.05$).

Table 2. Apralan® Compared to Neomycin or Mecadox® for Weaned Pigs (Trial II)[a]

Criterion	Treatment		
	Apralan® 150 g/ton	Neomycin 140 g/ton	Mecadox® 50 g/ton
Day 0 - 14			
Daily gain, lb	.65 ± .08	.60 ± .08	.62 ± .10
Daily feed, lb	.60 ± .08	.59 ± .09	.60 ± .11
Feed/gain	.91 ± .04	.99 ± .05	.98 ± .04
Day 14 - 28			
Daily gain, lb	.69 ± .08	.78 ± .15	.69 ± .12
Daily feed, lb	1.61 ± .08	1.63 ± .07	1.49 ± .20
Feed/gain	2.37 ± .41	2.16 ± .52	2.17 ± .30
Day 0 - 28			
Daily gain, lb	.67 ± .04	.69 ± .08	.65 ± .09
Daily feed, lb	1.12 ± .08	1.11 ± .07	1.03 ± .16
Feed/gain	1.66 ± .15	1.62 ± .20	1.59 ± .14

[a]Each value is the mean ± standard deviation for 4 pens per treatment, average initial wt. 8.1 lb. After the initial 14-day trial, all pigs were fed a diet medicated with Mecadox® from day 15 to day 28.

Table 3. Apralan® Compared to Neomycin - Terramycin for Weaned Pigs (Trial III)[a]

Criterion	Treatment	
	Apralan® 150 g/ton	Neomycin - Terramycin 140 - 100 g/ton
Day 0 - 14		
Daily gain, lb[b]	.64 ± .08	.53 ± .05
Daily feed, lb	.63 ± .10	.52 ± .05
Feed/gain	.98 ± .09	.97 ± .08
Day 14 - 28		
Daily gain, lb	1.00 ± .11	.98 ± .11
Daily feed, lb	1.98 ± .19	1.83 ± .10
Feed/gain	1.91 ± .11	1.94 ± .19
Day 0 - 28		
Daily gain, lb	.82 ± .09	.76 ± .06
Daily feed, lb	1.27 ± .14	1.21 ± .14
Feed/gain	1.54 ± .09	1.59 ± .10

[a]Each value is the mean ± standard deviation for 6 pens per treatment, average initial wt of 11.2 lb. After the initial 14-day trial, all pigs were fed a diet medicated with ASP-250® from day 15 to day 28.

[b]Treatments differ (P<.05).

Li Defa, graduate student in swine nutrition, prepares a sample in the laboratory.

Table 4. Apralan® Compared to Neomycin - Terramycin for Weaned Pigs (Trial IV)[a]

Criterion	Treatment	
	Apralan® 150 g/ton	Neomycin 140 g/ton
Day 0 -14		
Daily gain, lb[b]	.65 ± .13	.55 ± .09
Daily feed, lb[c]	.66 ± .15	.57 ± .09
Feed/gain	1.00 ± .05	1.03 ± .11
Day 14 - 28		
Daily gain, lb	1.08 ± .14	1.08 ± .14
Daily feed, lb	1.78 ± .25	1.75 ± .12
Feed/gain	1.67 ± .08	1.63 ± .06
Day 0 -28		
Daily gain, lb	.87 ± .12	.82 ± .11
Daily feed, lb	1.22 ± .20	1.16 ± .14
Feed/gain	1.42 ± .04	1.42 ± .07

[a]Each value is the mean ± standard deviation for 8 pens per treatment, average initial wt of 11.5 lb. After the initial 14-day trial, all pigs were fed a diet medicated with ASP-250® from day 15 to day 28.

[b]Treatments differ, ($P<.05$).

[c]Treatments differ, ($P<.09$).