Kansas Agricultural Experiment Station Research Reports

Volume 0
Issue 10 *Swine Day (1968-2014)*

Article 1025

2005

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EFFECTS OF CONTINUOUS OR INTERMITTENT RACTOPAMINE HCl (PAYLEAN[1]) USE ON PIG GROWTH PERFORMANCE IN LATE FINISHING

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Summary

A total of 110 barrows (PIC L210 × L42) with an initial weight of 154.4 lb were used in a 56-d feeding trial to evaluate the effects of continuously feeding ractopamine HCl (Paylean; 9 g/ton), withdrawing Paylean, or intermittent Paylean feeding on finishing pig performance. There were five experimental treatments fed the last 56 d before marketing; A) control diet (no Paylean) fed for 56 d; B) Paylean diet (9 g/ton) fed for 56 d; C) Paylean fed for 21 d, control for 14 d, then Paylean for 21 d; D) control fed for 7 d, Paylean fed for 21 d, control fed for 7 d, then Paylean fed for 21 d; and E) control fed for 35 d, then Paylean fed for 21 d. Pigs fed Paylean for 21 d then withdrawn for 7 or 14 d and then re-fed for 21 d (Treatments C and D) had similar response to those fed Paylean for only the last 21 d before market (Treatment E). Pigs fed these three treatments had final weight numerically increased by 3 to 5 lb over that of pigs continuously fed Paylean for the entire 56 d. During the period when Paylean was withdrawn (7 or 14 d), pigs lost much of the benefit that had been gained from Paylean feeding. But pigs fed Paylean again later seem to respond similarly to pigs that had never had Paylean in the diet.

(Key Words: Finishing Pig, Paylean, Withdrawal.)

Introduction

When ractopamine (Paylean) is fed to finishing pigs, the growth rate increases, with improvement in F/G and carcass characteristics. Once Paylean was approved for swine diets in December of 1999, many swine producers began feeding it to their finishing pigs the last three weeks before slaughter. Feeding Paylean increases body weight, which can help decrease the number of lightweight pigs that have to be sold to the packer at a discount. When a finishing barn is closed out, there typically are still some lightweight pigs, which will be heavily discounted by the packer. In some production systems, the lightweight pigs are moved from the finishing barn to an off site barn to be fed out until they reach optimal market weight. Depending on the production system, these pigs will either remain continuously on a diet containing Paylean, or will be fed a diet without Paylean and then be re-fed Paylean as they approach the appropriate market weight. In a previous trial (see page 164), pigs fed Paylean at 9 g/ton for 21 d, had Paylean withdrawn for 14 d and were re-fed Paylean for 21 d had the same overall ADG and F/G as pigs that were fed Paylean for the

[1]Paylean is a registered trademark of Elanco Animal Health, Indianapolis, IN.
[2]Food Animal Health & Management Center, College of Veterinary Medicine.

last 21 d only. We wanted to evaluate the growth response of pigs when Paylean was fed continuously for 56 d; fed for 21 d, withdrawn for either 7 or 14 d, and re-fed for 21 d; and fed for the last 21 d only.

Procedures

A total of 110 barrows (PIC L210 × L42) with an initial weight of 154.4 lb were used in a 56-d growth study with two pigs per pen and a total of 55 pens (5 × 5 ft). There were 11 replications (pens) on each of the five experimental treatments, in a randomized complete-block design. The pigs were blocked by weight and initial ADG from the previous two weeks before the pigs started on trial. The pigs were housed at Kansas State University Swine Research and Teaching Center in an environmentally controlled finishing barn with totally slatted flooring, a self feeder and one nipple waterer in each pen. Experimental treatments began 56 d before the pigs were marketed. The treatments were: A) control diet fed for 56 d; B) Paylean diet (9.0 g/ton) fed for 56 d; C) Paylean fed for 21 d, control fed for 14 d, then Paylean for 21 d; D) control fed for 7 d, Paylean for 21 d, control for 7 d, then Paylean for 21 d; and E) control for 35 d, then Paylean for 21 d. All experimental diets were based on sorghum-soybean meal and were formulated to contain 1.0% lysine with no added fat (Table 1). Pigs were weighed every 7 d to determine ADG, ADFI, and F/G. Statistical analysis was conducted as a repeated-measures experimental design by using the MIXED procedure of SAS.

Results and Discussion

From d 0 to 21, pigs fed Paylean had increased ($P<0.0001$) ADG and improved ($P<0.0007$) F/G, compared with pigs fed diets without Paylean (Table 2). When pigs were fed Paylean for 21 d then withdrawn for either 14 or 7 d and re-fed for 21 d (Treatments C and D), overall ADG and F/G was similar ($P>0.24$) to performance of pigs that were only fed Paylean for the last 21 days (Treatment E). Treatment E pigs had increased ADG, compared with the control pigs. Because the response to Paylean depended on the number of consecutive weeks that the pigs had received Paylean, there was a treatment × week interaction for ADG ($P<0.0001$). Pigs fed Paylean for all 56 d had improved ADG and F/G at the beginning of the trial and lost the positive response to Paylean by the end of the trial.

Table 1. Diet Composition (As-fed Basis)

Ingredient, %	Control
Sorghum	73.58
Soybean meal (46.5% CP)	23.85
Monocalcium P (21% P)	0.80
Limestone	0.93
Salt	0.35
Vitamin premix	0.15
Trace mineral premix	0.15
Antibiotic[a]	0.05
Lysine HCl	0.15
Ractopamine HCl[b]	-
Total	100.00
Lysine, %	1.00
ME, kcal/lb	1,483
Protein, %	17.9
Ca, %	0.60
P, %	0.55
Available P, %	0.25
Lysine:calorie ratio, g/mcal	3.06

[a]All diets contained 40 g/ton of tylosin.
[b]Ractopamine was added (9 g/ton) at the expense of sorghum to provide the Paylean diet.

In conclusion, withdrawing Paylean for 7 or 14 d, then re-feeding for 21 d, provided a similar response to feeding Paylean for only the last 21 d before market. These three treatments numerically increased final weight by 3 to 5 lb over continuously feeding Paylean for the entire 56 d. During the period when Paylean was withdrawn, pigs lost much of the benefit that had been gained from Paylean feeding. But pigs placed back on a diet containing Paylean seem to respond similarly to pigs that had never had Paylean in the diet. Therefore, it seems likely that weight gain will be greater and cost lower if lightweight pigs previously fed Paylean are moved to another facility and fed a diet without Paylean for 7 to 14 d, followed by another regimen of feeding Paylean, rather than continuously feeding the Paylean after the pigs have been moved.

Table 2. Effects of Continuous or Intermittent Ractopamine HCl (Paylean) Feeding on Pig Growth Performance in Late Finishing[a]

	Paylean Fed During These Days					
Item	None	0 to 56	0 to 21	7 to 28	35 to 56	SED
Initial weight, lb	153.4^{cy}	154.3^{bc}	153.8^{bcy}	155.1^{b}	155.3^{b}	0.765
d 0 to 21						
ADG, lb	2.34^{c}	2.75^{b}	2.81^{b}	2.78^{b}	2.39^{c}	0.095
ADFI, lb	7.26	7.50	7.60	7.35	7.51	0.242
F/G	3.11^{c}	2.74^{b}	2.70^{b}	2.65^{b}	3.14^{c}	0.139
d 0 to 28						
ADG, lb	2.31^{dy}	2.65^{bx}	2.57^{bcx}	2.73^{bx}	2.39^{cdy}	0.095
ADFI, lb	7.33	7.50	7.47	7.44	7.48	0.242
F/G	3.17^{cy}	2.84^{bx}	2.91^{bcx}	2.73^{bx}	3.13^{cy}	0.139
d 0 to 35						
ADG, lb	2.37^{cy}	2.60^{bx}	2.48^{bcxy}	2.60^{bx}	2.43^{bcy}	0.095
ADFI, lb	7.49	7.48	7.53	7.41	7.65	0.242
F/G	3.17^{dy}	2.89^{bcx}	3.03^{bcdxy}	2.86^{bx}	3.15^{cdy}	0.139
d 0 to 56						
ADG, lb	2.22^{cy}	2.29^{bcxy}	2.38^{bcx}	2.38^{bcx}	2.41^{bx}	0.095
ADFI, lb	7.56^{xy}	7.25^{y}	7.59^{xy}	7.29^{y}	7.72^{x}	0.242
F/G	3.42^{cy}	3.17^{bcx}	3.19^{bcx}	3.07^{bx}	3.20^{bcxy}	0.139
Final weight, lb	277.5^{cy}	284.7^{bcx}	286.9^{b}	288.5^{b}	290.4^{b}	4.084
Weight gain, lb	124.1^{c}	130.4^{bc}	133.1^{b}	133.4^{b}	135.1^{b}	4.174

[a]A total of 110 barrows (PIC L210 × L42) with eleven pens per treatment. Treatment × Week interaction for ADG (P<0.0001) and treatment response for F/G (P<0.0007) for the overall trial. Week (P<0.0001) also was significant for all criteria, but there was no treatment response for ADFI (P = 0.50).

[bcd]Means in the same row without common superscript differ (P<0.05).

[xy]Means in the same row without common superscript differ (P<0.10).