

EFFECTS OF INTERMITTENT RACTOPAMINE HCl (PAYLEAN¹) USE ON PIG GROWTH PERFORMANCE IN LATE FINISHING

*C. R. Neill, R. D. Goodband, M. D. Tokach, J. L. Nelssen, S. S. Dritz²,
J. M. DeRouchey, C. N. Groesbeck, and K. R. Brown*

Summary

A total of 324 pigs (initially 149 lb) were used in a 56-d feeding trial to examine growth performance of pigs as affected by different ractopamine HCl (Paylean) regimens. There were four experimental treatments: A) the control diet fed for 56 d; B) the Paylean diet (9 g/ton) fed for 21 d, then control for 35 d; C) Paylean fed for 21 d, then control for 14 d, and then Paylean for 21 d; and D) control diet 35 d and then Paylean 21 d. Treatment C (feeding Paylean for 21 d, withdrawing it for 14 d, and re-feeding for 21 d) had the same overall affect on ADG and F/G as feeding Paylean for the last 21 d only. Weight gain was greater ($P < 0.008$) for the pigs in Treatments C and D, which fed Paylean for the last 21 d, compared with that of control pigs or those fed Paylean for the initial 21 d of the study only. Pigs fed Paylean and then had it withdrawn had decreased ($P > 0.46$) ADG and F/G, compared with pigs not previously fed Paylean. These results suggest that withdrawing Paylean for 14 d and re-feeding will have the same overall growth effect as feeding Paylean once.

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

Introduction

Ractopamine (Paylean, Elanco, Indianapolis, IN) is a feed additive approved in the United States since December 1999 for use in swine diets. Paylean has been proven to increase ADG, improve F/G, and increase pig weights when fed immediately before market. In commercial production, however, when a finishing barn is closed out, there is still a small population of lightweight finishing pigs not yet ready for market. Many production systems move these lightweight pigs off site to be fed to market weight. Depending on the production system, pigs may be fed a diet with or without Paylean. Our goal was to determine the effects of Paylean withdrawal or intermittent Paylean feeding on growth performance and to develop recommendations on how to effectively manage Paylean use in lightweight pigs.

Procedures

This experiment was conducted at the Kansas State University Swine Research and Teaching Center. A total of 342 pigs (228 barrows, 96 gilts) with an initial weight of 148.9 lb were used in a 56-d feeding trial. The pigs (PIC L327 \times L42 and PIC L210 \times L42) were allotted by weight and put into pens of 11 or

¹Paylean is a registered trademark of Elanco Animal Health, Indianapolis, IN.

²Food Animal Health & Management Center, College of Veterinary Medicine.

12, with a total of 28 pens in a completely randomized block design with 7 pens per treatment. The pens had half solid and half slatted flooring with a deep pit and one curtain side. Each pen had one nipple waterer and a two-hole self feeder.

There were two diets used: a control diet (no Paylean) or the control diet containing 9 g/ton of Paylean. Diets were based on sorghum-soybean meal with no added fat, and included 3 lb/ton of synthetic lysine, formulated to contain 1.0% total lysine.

Table 1. Diet Composition %

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, %	17.90
Ca, %	0.60
P, %	0.55
Available P, %	0.25
Lysine:calorie ratio, g/mcal	3.06

^aAll diets contained 40 g/ton of tylosin.

^bRactopamine was added (9 g/ton) at the expense of sorghum to provide the Paylean diet.

Experimental treatments consisted of A) the control diet fed for 56 d; B) the Paylean diet (9 g/ton) fed for 21 d, and then the control diet fed for 35 d; C) Paylean fed for 21 d, the control diet fed for 14 d, and then the Paylean

diet fed for 21 d; and D) the control diet fed for 35 d, and then the Paylean diet fed for 21 d. Pigs were weighed individually on d 21, 28, 35, 42, 49, and 56 to determine ADG, ADFI, and F/G. Statistical analysis was conducted according to SAS v. 8.1 by using the MIXED procedure in a randomized complete block design.

Results and Discussion

From d 0 to 21, Treatments B and C had increased ADG ($P<0.0003$; 2.11 lb for control and 2.34 lb for pigs fed Paylean) and improved F/G ($P<0.0001$; 2.69 for control and 2.49 for pigs fed Paylean), compared with pigs fed diets without Paylean (Treatments A and D; Table 2). From d 21 to 35 (when no Paylean was fed) ADG was greater ($P<0.007$) for Treatments A and D, than for Treatments B and C (2.16 vs. 1.94 lb, respectively). There were no differences in F/G for this time period. For the last 21 d (d 35 to 56) of the trial, pigs fed Paylean (Treatment D) for the first time and pigs re-fed Paylean (Treatment C) had increased ADG ($P>0.0001$: 2.26 lb for pigs fed Paylean and 1.96 lb for the pigs not fed Paylean) and improved F/G ($P<0.0001$; 2.95 for pigs fed Paylean and 3.46 for pigs not fed Paylean), compared with pigs not fed Paylean (Treatments A and B).

For the overall 56-d trial, pigs fed Paylean from d 0 to 21 and withdrawn for 14 d and re-fed Paylean the last 21 d and pigs fed Paylean the last 21 d (Treatments C and D) had increased ADG ($P<0.003$) and improved F/G ($P<0.0001$) compared with pigs fed the control diet for 56 d and pigs fed Paylean from d 0 to 21 then fed the control diet from d 21 to 56 (Treatments A and B; 2.20 and 2.84 vs. 2.08 and 3.04, respectively). Pigs fed Paylean for 21 d then withdrawn for 14 d and then re-fed for 21 d (Treatment C) and those fed Paylean for the last 21 d (Treatment D) had heavier ($P<0.02$) weights at the end of the

trial, compared with pigs not fed Paylean or fed Paylean for the first 21 d only (Treatments A and B). Also, the weight gain was significantly more ($P<0.008$) for the pigs fed Paylean for 21 d then withdrawn for 14 d and then re-fed for 21 d and those fed Paylean for the last 21 d only (Treatments C and D), compared with pigs fed diets without Paylean or fed Paylean for the first 21 d only (Treatments A and B).

Pigs fed Paylean did not maintain the additional weight gain when later fed a diet without Paylean. These pigs had no significant additional weight at the end of the trial, compared with control pigs. Also, there was no additional weight gain from Treatment C, because their growth rate was less than that of

the control pigs during the intermittent period. Some producers reportedly feed a withdrawal diet that does not contain Paylean after feeding Paylean, to ensure that feed bins contain Paylean-free feed for the next group of pigs. Our data indicates that some of the weight advantage to feeding Paylean will be rapidly lost with this practice, reducing the economic value of feeding Paylean.

It is interesting that the response to feeding Paylean intermittently during the re-feeding period seems to be similar to that of pigs fed Paylean for the first time. This indicates that withdrawing Paylean for a period of time and then re-feeding Paylean will have the same results as feeding pigs Paylean for the first time.

Table 2. Effects of Intermittent Ractopamine HCl (Paylean) Use on Pig Growth Performance in Late Finishing^a

Item	Paylean Fed During These Days				SE	Probability, $P <$ Treatment
	None	0 to 21	0 to 21 and 35 to 56	35 to 56		
Initial Weight, lb	148.9	149.0	148.8	149.0	0.110	0.13
d 0 to 21						
ADG, lb	2.10 ^b	2.34 ^c	2.34 ^c	2.12 ^b	0.057	0.001
ADFI, lb	5.73 ^{bc}	5.87 ^c	5.79 ^{bc}	5.62 ^b	0.097	0.11
F/G	2.72 ^b	2.51 ^c	2.47 ^c	2.65 ^b	0.049	0.001
d 21 to 35						
ADG, lb	2.12 ^c	1.96 ^b	1.92 ^b	2.20 ^c	0.080	0.007
ADFI, lb	6.55	6.28	6.33	6.57	0.177	0.26
F/G	3.09 ^{bc}	3.22 ^{bc}	3.32 ^b	2.98 ^c	0.125	0.07
d 35 to 56						
ADG, lb	1.98 ^b	1.93 ^b	2.25 ^c	2.27 ^c	0.047	0.001
ADFI, lb	6.80	6.72	6.63	6.68	0.171	0.76
F/G	3.45 ^b	3.48 ^b	2.94 ^c	2.95 ^c	0.082	0.001
d 0 to 56						
ADG, lb	2.06 ^b	2.09 ^b	2.20 ^c	2.20 ^c	0.041	0.003
ADFI, lb	6.33	6.29	6.23	6.25	0.116	0.85
F/G	3.07 ^b	3.00 ^b	2.83 ^c	2.84 ^c	0.033	0.001
Final weight, lb	265.4 ^c	266.2 ^c	272.0 ^b	272.9 ^b	2.573	0.02
Weigh gain, lb	116.5 ^c	117.2 ^c	123.2 ^b	123.9 ^b	2.471	0.008

^aA total of 324 pigs (PIC L327 × L42 and PIC L210 × L42; 228 barrows and 96 gilts) initially 148.9 lb, with 28 pens and 11 or 12 pigs/pen.

^{bc}Means in the same row without a common superscript differ ($P < 0.05$).