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G E. Fitzner

Donald H. Kropf

Robert H. Hines

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Sustained effects of porcine somatotropin administered during the growing period on growth and carcass characteristics of finishing pigs

Abstract

Forty six barrows were fed a common diet after completing a 35 d growth trial in which 50% received 5 mg/d of pST and the other 50% a placebo injection. At the conclusion of the growing trial (130 lb), the pST-injected pigs were leaner (22%) and yielded carcasses with larger longissimus muscle area (21 %). However, pigs fed to a slaughter weight of 225 lb yielded carcasses that were not different from control pigs in length, longissimus muscle area, or belly weights. Pigs administered pST during the growing phase continued to have 10% less backfat, which resulted in a 1.6% greater yield of lean cuts. Postinjection growth rate of pST-treated pigs was significantly reduced for the initial 2 wk to cause an overall reduced ADG during the finishing period. Days to reach slaughter did not differ with treatment because those pigs previously receiving pST were heavier initially. There is no advantage to injecting pigs with pST during the growing phase to improve overall growth. However, pST administration during the growing phase appears to have a sustained effect on carcass fat thickness of pigs slaughtered at 225 lb.; Swine Day, Manhattan, KS, November 19, 1992

Keywords

Swine day, 1992; Kansas Agricultural Experiment Station contribution, no. 93-142-S; Report of progress (Kansas State University. Agricultural Experiment Station and Cooperative Extension Service); 667; Swine; G-F; Performance; Carcass; Repartition

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K **SUSTAINED EFFECTS OF PORCINE SOMATOTROPIN**
S **ADMINISTERED DURING THE GROWING PERIOD ON GROWTH**
U **AND CARCASS CHARACTERISTICS OF FINISHING PIGS**

G. E. Fitzner, R. H. Hines, and D. H. Kropf

Summary

Forty six barrows were fed a common diet after completing a 35 d growth trial in which 50% received 5 mg/d of pST and the other 50% a placebo injection. At the conclusion of the growing trial (130 lb), the pST-injected pigs were leaner (22%) and yielded carcasses with larger longissimus muscle area (21%). However, pigs fed to a slaughter weight of 225 lb yielded carcasses that were not different from control pigs in length, longissimus muscle area, or belly weights. Pigs administered pST during the growing phase continued to have 10% less backfat, which resulted in a 1.6% greater yield of lean cuts. Postinjection growth rate of pST-treated pigs was significantly reduced for the initial 2 wk to cause an overall reduced ADG during the finishing period. Days to reach slaughter did not differ with treatment because those pigs previously receiving pST were heavier initially. There is no advantage to injecting pigs with pST during the growing phase to improve overall growth. However, pST administration during the growing phase appears to have a sustained effect on carcass fat thickness of pigs slaughtered at 225 lb.

(Key Words: GF, Performance, Carcass, Repartition.)

Introduction

Exogenous administration of porcine somatotropin (pST) has been reported (1991 KSU Swine Day Report of Progress 641) to increase average daily gain (ADG), reduce average daily feed intake (ADFI), and improve feed efficiency (F/G) of growing pigs

from 68 lb to 130 lb. In addition, injection of pST (5 mg/d) resulted in reduced average backfat thickness and tenth rib fat depth and increased longissimus area compared to control pigs receiving a placebo injection. The question of carryover effect of these observed parameters for growth and carcass characteristics in the growing pig has not been routinely evaluated at market weight. Therefore, the purpose of this trial was to determine if pST can be given in the growing phase and improve finishing performance and carcass characteristics at a final weight of 225 lb.

Procedure

Growing Phase. One hundred and twenty crossbred (Chester White × Hampshire × Yorkshire) barrows were allotted by weight and ancestry in a 2 × 6 factorial arrangement. Six diets were formulated to contain .7, 1.1, 1.5, 1.9, 2.3, or 2.7% lysine and fed to barrows receiving either a placebo (0 mg/d) or pST (5 mg/d) injection. Results of the performance and carcass characteristics of this trial are reported in the 1991 KSU Swine Day Report of Progress 641. The pigs started on the 5 wk trial at 68 lb; the 72 head slaughtered at termination weighed 130 lb.

Finishing Phase. On d 36, the 46 remaining pigs were fed a common diet formulated to contain .9% lysine (Table 1). Pigs were fed to a live wt of 225 lb, at which time they were removed individually for slaughter to determine carcass characteristics. Carcasses were chilled for 24 hr at 40°C before obtaining standard carcass measurements (carcass length, average backfat thickness,

tenth rib fat depth, and longissimus muscle area). The right half of each carcass was broken into wholesale cuts with weights of closely trimmed ham, loin, Boston butt, and picnic shoulder determined to calculate percentage of lean cuts. Belly weight was also recorded to determine the carryover effect of pST administration during the growing phase on a fatter wholesale cut.

Table 1. Composition of Finishing Diet^a

Ingredient	%
Ground corn	77.87
Soybean meal (48% CP)	19.45
Monocalcium phosphate	.75
Limestone	.88
Salt	.50
L-lysine·HCl	.15
Selenium premix	.05
Vitamin premix	.25
Mineral premix	.10

^aCalculated composition: 16.0% crude protein, .90% lysine, .60% calcium, .50% phosphorous, and 3.32 ME, Mcal/kg.

Pigs were housed in an environmentally controlled building with a totally slatted floor. Pigs were fed ad libitum from self feeders and had access to a nipple waterer. Pigs were weighed at wk 1, 2, and 3 to determine the carryover effect of pST on growth. Pigs were then weighed once every 2 weeks to monitor performance before slaughter.

Results and Discussion

Postinjection Finishing Performance. Because pigs were assigned to experimental

treatment for a fixed time (35 d) during the growing period, the postinjection initial weight was greater for the pST-treated pigs. Pigs were slaughtered at a constant weight (225 lb); thus, the overall gain was inversely affected by the initial weight.

During the first week, pigs previously given pST had reduced ($P < .01$) ADG compared to control pigs. The reduction in ADG ($P < .01$) continued through wk 2 for the pST pigs. Although not significant, the trend in lower ADG continued through wk 3. During the overall finishing period, ADG of pigs previously treated with pST was reduced ($P < .01$) by 9% compared to control pigs. Days to slaughter were not affected by pST treatment or by dietary lysine treatment during the growing period.

Carcass Characteristics of Finishing Pigs. Dressing percentage, carcass length, longissimus muscle area, and belly weight of finishing pigs were not affected by treatment with pST during the 35 d growing period (Table 2). Tenth rib fat depth and average backfat thickness were reduced ($P < .05$) in pigs treated with pST compared to control pigs. The leaner carcasses resulted in an increased ($P < .05$) percentage of lean cuts for those pigs that were given pST during the growing period. Weights of liver and heart were not affected by treatment with pST; however, kidneys were heavier in the pST-treated pigs.

Pigs administered pST (5 mg/d) during the growing phase gained 13% faster and were 22% leaner as measured by average backfat thickness. In addition, the loin eyes were 21% larger. Only a 10% reduction in average backfat thickness carried over through the finishing phase to slaughter weight after the 35 d injection period.

Table 2. Effect of Porcine Somatotropin (pST) Administration to Growing Pigs on Postinjection Growth Performance of Finishing Pigs^a

Item	Grower treatment	
	Placebo	5 mg/d pST
Post injection initial wt, lb ^b	124.3	131.1
Average daily gain, lb		
Wk 1 ^b	1.43	1.00
Wk 2 ^b	1.79	1.34
Wk 3	1.67	1.50
Overall ^b	1.53	1.38
Days to slaughter	67.2	68.5
Slaughter wt, lb	225.5	225.1
Dressing percentage	74.5	74.0
Carcass length, in.	31.4	31.5
Tenth rib fat depth, in. ^b	1.23	1.07
Average backfat thickness, in. ^b	1.26	1.14
Longissimus muscle area, sq. in.	4.74	4.80
Lean cuts, % ^b	54.6	56.2
Belly wt, lb	15.4	15.0

^aMeans represent 23 pigs/treatment.

^bP < .05.

