Kansas Agricultural Experiment Station Research Reports

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

Article 286

1984

Effects of Compudose® implants on performance carcass, meat quality traits and serum testosterone in young boars

T Timmis

Michael E. Dikeman

Melvin C. Hunt

See next page for additional authors

Recommended Citation

Timmis, T; Dikeman, Michael E.; Hunt, Melvin C.; Highfill, G; Stevenson, Jeffrey S.; and Hines, Robert H. (1984) "Effects of Compudose® implants on performance carcass, meat quality traits and serum testosterone in young boars," *Kansas Agricultural Experiment Station Research Reports*: Vol. 0: Iss. 10. https://doi.org/10.4148/2378-5977.6126

Effects of Compudose® implants on performance carcass, meat quality traits and serum testosterone in young boars

Abstract

Implanting boar pigs at 100 lb with 24 mg of Compudose 200Â® (estradiol 17Î²) had no significant effect on "boar odor" in meat, rate of gain, feed efficiency, carcass leanness or meat quality traits. The presence of a 7 to 8 mo old gilt in the pen decreased rate of growth in both control and implanted boars, but contrary to our expectations did not increase the incidence of â€œboar odor".; Swine Day, Manhattan, KS, November 15, 1984

Keywords

Swine day, 1984; Kansas Agricultural Experiment Station contribution; no. 85-132-S; Report of progress (Kansas State University. Agricultural Experiment Station and Cooperative Extension Service); 461; Swine; Compudose; Carcass; Meat quality; Serum; Testosterone

Authors

T Timmis, Michael E. Dikeman, Melvin C. Hunt, G Highfill, Jeffrey S. Stevenson, and Robert H. Hines

EFFECTS OF COMPUDOSE® IMPLANTS ON PERFORMANCE, CARCASS, MEAT QUALITY TRAITS AND SERUM TESTOSTERONE IN YOUNG BOARS

Toni Timmis, Michael E. Dikeman, Melvin C. Hunt, Robert Hines, Greg Highfill, Jeffrey S. Stevenson

Summary

Implanting boar pigs at 100 lb with 24 mg of Compudose 200® (estradiol 17ß) had no significant effect on "boar odor" in meat, rate of gain, feed efficiency, carcass leanness or meat quality traits. The presence of a 7 to 8 mo old gilt in the pen decreased rate of growth in both control and implanted boars, but contrary to our expectations did not increase the incidence of "boar odor".

Introduction

Boars are more efficient in feed conversion than barrows because they have a higher lean to fat ratio at the same age or weight. However, boar meat frequently has a "boar" or "sex odor" that is objectionable to most people, particularly women. Implanting bull calves with Compudose 200® depresses their sexual development. Since "boar odor" begins to occur when boars reach puberty, delaying sexual development in young boars may decrease its incidence at traditional slaughter weights. Therefore, we attempted to "modify" boars to eliminate "boar odor" in meat, but maintain the carcass leanness and feed efficiency advantages that boars have. To "modify" young boars, we implanted them with Compudose 200®, a slow release, natural estradial implant.

Procedures

Forty-eight male pigs were obtained after weaning and allotted into 5 treatments:

C - (Controls) - four pens of three nonimplanted boars
B - (Barrows) - four pens of three castrated males
I - (Implants) - four pens of three implanted boars
I/G - (Implants with Gilt) - six implanted boars penned with a 7 to 8 mo old gilt
C/G - (Controls with Gilt) - six control boars penned with a 7 to 8 mo old gilt

All pigs were put on test at approximately 12 wk of age and fed ad libitum a 12% protein finishing diet. Treatments I and I/G were implanted with 24 mg of Compudose 200® subcutaneously perpendicular to the center of the base of the right ear. A 7 to 8 mo old gilt was penned with each of the I/G and C/G treatments to potentially stimulate a higher incidence of boar odor. All pigs and feed weights were recorded at 2-wk intervals to calculate average daily gain (ADG) and feed efficiency (F/G). Because of the presence of the 7 to 8 mo old gilt in treatments I/G and C/G, feed efficiency was not calculated for those treatments. Blood was collected weekly beginning at 22 wk of age until slaughter for measuring serum testosterone levels.

Those in treatments C, B, and I were slaughtered at 165 days of age at approximately 240 lb. Treatments I/G and C/G were slaughtered at 186 days of age due to their slower growth rates. Salivary weight was recorded for all pigs and testes weight and volume were recorded for all I and C boars.

Carcasses were measured for backfat thickness, tenth rib fat depth, length and loin eye area. Muscling score, USDA grade, and predicted percentage of muscle were determined.

Meat quality traits of firmness, exudativeness (wateriness) and color of loin eye were scored subjectively. An objective measure of tenderness was obtained by oven-broiling a rib chop from each pig until it reached 165 F. Then, cores from the longissimus dorsi (loin eye) muscle were sheared using the Warner Bratzler Shear (WBS) apparatus. Odor was measured subjectively by a trained "boar odor" detection panel. To detect the odor, a 2 to 3 g sample of backfat from the seventh rib chop was smeared directly on a hot plate heated to 257 F. If present, the odor was released in 5 to 10 sec and intensity was scored on a five-point scale.

Results and Discussion

Table 1 shows that treatments C, B, and I were not different in ADG, whereas the presence of a 7 to 8 mo old gilt in treatments I/G and C/G caused a decrease of .3-.4 lb/day. Although not significant, C/G tended to gain slower than I/G (1.41 vs 1.28, respectively). C and I boars did not differ in F/G, but as expected, were more efficient than barrows by .4 lb feed/lb gain.

Implanting with Compudose 200® had no significant effect on carcass traits among any of the four boar treatments (table 2). Barrow carcasses were fatter and shorter, had the least desirable grade, lowest predicted percentage of muscle, and lowest muscling score of all treatments. These differences between barrows and boars were expected.

Table 3 shows that there were significant differences in "boar odor" scores and it appeared that Compudose 200® effectively postponed the odor or decreased its intensity when comparing treatments C, B, and I. However, this trend is contradicted when treatment C/G, which should have had the highest "boar odor" score, had lower intensity scores than barrows. There were no significant differences among the four boar treatments for muscle color or tenderness, but barrows had the lightest color and the most tender meat. Control and I boars had firmer and less exudative meat than I/G and tended to be firmer and less exudative than B and C/G.

Table 4 shows that boars in treatment C had heavier salivary weights than those in B or I treatments, which we expected. There were no differences in testes weight and volume between C and I treatments. Testosterone levels in week 1 showed no differences between C and I, whereas weeks 2 and 3 showed significant increases for C. This indicates that testosterone production was significantly depressed by the Compudose 200® implant. However, this trend conflicts with testosterone levels of I/G and C/G treatments. We expected C/G to have heavier testes weights and higher levels of testosterone. Actually, I/G had larger and heavier testes and heavier salivary glands than C/G. In contrast to I and C treatments, I/G and C/G showed no differences in testosterone levels in any week.

Implanting with Compudose 200® at 100 lb tends to decrease "boar odor" and testosterone levels and maintains advantages in ADG, feed efficiency, and carcass leanness. However, treatments I/G and C/G tend to confound the results. Therefore, it is difficult to make definite conclusions. Implanting earlier than at 100 lb might have had more effect on sexual development and "boar odor".

Table 1. Beginning and Slaughter Weights, Average Daily Gain (ADG) and Feed Efficiency (F/G) of Control and Implanted Boars and Barrows

Trait	Treatments[w]				
	C	B	I	I/G	C/G
Beginning wt, lb	100.5	102.1	99.8	99.8	94.0
Slaughter wt, lb	239.7	242.1	244.4	247.2	228.0
ADG, lb	1.68[a]	1.69[a]	1.74[a]	1.41[b]	1.28[b]
F/G, lb	2.78[b]	3.21[a]	2.80[b]	-	-

[w]C = control boars, B = barrows, I = implanted boars, I/G = implanted boars penned with 7 to 8 mo old gilt, C/G = control boars penned with 7 to 8 mo old gilt.

[ab]Means on the same line with different superscripts differ (P<.05).

Table 2. Carcass Measurements for Control and Implanted Boars and Barrows

Trait	Treatments[w]				
	C	B	I	I/G	C/G
Backfat, in	1.03[b]	1.36[a]	1.00[b]	1.01[b]	.90[b]
Fat Depth, in	.92[b]	1.36[a]	.87[b]	.97[b]	.85[b]
Loin Eye Area, sq in	4.88	4.68	4.64	5.07	4.83
Length, in	32.6[ab]	32.0[b]	33.0[a]	33.0[a]	32.7[ab]
USDA Grade	1[o a]	2[+ b]	1[- a]	1[o a]	1[- ab]
% Muscle	53.45[a]	50.78[b]	53.98[a]	54.45[a]	55.37[a]
Muscling score	Th[- b]	Th[o a]	MTh[+ b]	Th[- b]	MTh[+ b]

[w]C = control boars, B = barrows, I = implanted boars, I/G = implanted boars penned with 7 to 8 mo old gilt, C/G = control boars penned with 7 to 8 mo old gilt.

[ab]Means on the same line with different superscripts differ (P<.05).

Table 3. Trained Sensory Panel Boar Odor Scores and Meat Quality Traits of Control and Implanted Boars and Barrows.

Trait	Treatments[w]				
	C	B	I	I/G	C/G
Odor[x]	1.79[a]	1.09[b]	1.12[b]	1.42[ab]	0.97[b]
WBS[y]	8.51[a]	7.24[b]	8.69[a]	8.37[ab]	8.15[ab]
Color[z]	2.63[ab]	2.31[b]	2.63[ab]	3.25[a]	2.58[ab]
Firmness[z]	2.29[b]	2.56[ab]	2.25[b]	3.17[a]	2.75[ab]
Exudate[z]	2.42[b]	2.71[ab]	2.25[b]	3.33[a]	3.00[ab]

[w]C = control boars, B = barrows, I = implanted boars, I/G = implanted boars penned with 7 to 8 mo old gilt, C/G = control boars penned with 7 to 8 mo old gilt.
[x]0-none, 1-very slight, 2-slight, 3-moderate, 4-strong, 5-very strong.
[y]lbs of force required to shear through .5 in. core.
[z]1=Extremely pale, soft and watery; 2=pale, moderately soft and moderately watery; 3=uniformly grayish-pink, moderately firm and moderately dry; 4=moderately dark, firm and dry; 5=dark, firm and dry.
[ab]Means on the same line with different superscripts differ (P<.05).

Table 4. Salivary, Testes, and Testosterone Measurements of Control and Implanted Boars and Barrows.

Trait	Treatments[w]				
	C	B	I	I/G	C/G
Salivary wt. (gm)	69.9[a]	41.9[c]	59.9[b]	69.6[ab]	60.5[ab]
Testes wt. (gm)	266.8[b]	-	272.6[b]	321.4[a]	250.9[b]
Testes Vol. (ml^3)	263.8[ab]	-	267.1[ab]	304.2[a]	233.3[b]
Testosterone, ng/ml[x]					
Week 1	6.9[c]	1.1[d]	5.7[c]	4.1[c]	5.9[c]
Week 2	8.1[c]	0.3[d]	5.1[d]	9.7[c]	6.2[c]
Week 3	10.2[c]	2.0[d]	5.7[d]	5.1[d]	4.6[d]
Week 4	-	-	-	2.8[a]	4.1[a]
Week 5	-	-	-	3.8[a]	4.3[a]

[x]Level of testosterone measured weekly until slaughter beginning at 22 wk.
[abc]Means on the same line with different superscripts differ significantly (P<.05).
[de]Means different from control boars witnin week (P<.05).