TIMING OF TRENBOLONE ACETATE IMPLANTS ON PERFORMANCE, CARCASS CHARACTERISTICS, AND BEEF QUALITY OF FINISHING STEER CALVES

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Summary

Angus and Angus-cross calves (632 lb) were utilized in a finishing study to evaluate the effects of implanting with estradiol and progesterone (Synovex-S®) and(or) trenbolone acetate (Finaplix®) on performance of finishing steers. Over the entire finishing period (117 d), implanted steers had higher ($P < .05$) daily gains and were more efficient than nonimplanted steers. Carcasses from implanted cattle had heavier ($P < .05$) hot weights and larger ($P < .05$) ribeye areas. Steers implanted with Finaplix had larger ($P < .05$) ribeye areas than those implanted with Synovex only. Marbling scores and quality grades were not affected by implant treatments. Rib (9-10-11) sections from implanted steers were heavier ($P < .05$) as a result of both heavier ($P < .05$) bone and soft tissue weights. However, no differences in percentages of protein, fat, and moisture were detected by proximate analysis of the soft tissue. Concomitant use of Finaplix with Synovex-S did not affect performance of Angus and Angus-crossed steer calves.

(Key Words: Trenbolone Acetate, Performance, Carcass Traits, Chemical Composition)

Introduction

Substantial liveweight gain responses have been reported from implanting anabolic agents in finishing beef steers. Finaplix® (F), an implant containing trenbolone acetate, an anabolic androgenic steroid, has been shown to increase muscle to bone ratio and ribeye area and decrease both subcutaneous and intramuscular fat. Gain is further enhanced when F is used in combination with an estrogenic agent such as Synovex (S). Research at other universities has shown that Finaplix may reduce quality grade by 8 to 10%. Whether implanting Finaplix early in the finishing period will lessen this reduction in grade is not clear. Nor do we know the effect on carcass characteristics of implanting early with F followed by a subsequent F implant midway through the finishing period. Therefore, our objectives were to determine the effects of 1) implanting F early and late in the finishing period and 2) implanting F one or two times on animal performance, carcass traits, and beef palatability estimates.

Experimental Procedures

Eighty springborn, Angus and Angus-crossbred, steer calves (632 lb) were used to evaluate the following treatments: 1) non-implanted control (C); 2) implanted with S twice; 3) implanted with S then S + F; 4) implanted with S + F then S; and 5) implanted with S + F twice. Treatment groups consisted of four replications of four animals per pen. Reimplanting occurred on d 69 of the finishing period.

Cattle from the two heaviest replications were slaughtered after 110 d, and the re-

maining two replications were slaughtered 14 d later, at the IBP Inc. packing plant in Emporia, Kansas. USDA quality and yield grades were obtained 24 h postmortem. Whole rib sections from all steers were removed and shipped to the KSU Meats Laboratory and aged until 6 d postmortem. Two 1-inch-thick ribeye steaks were removed for Warner-Bratzler shear and collagen solubility determinations. The 9-10-11 rib section was isolated, weighed and physically separated into bone and soft tissue components. The soft tissue was ground, subsampled, and frozen for subsequent chemical analysis.

Results and Discussion

Implanted steers gained 14% faster ($P < .05$) while consuming 6% more ($P < .05$) dry matter over the entire feeding period, resulting in an 8.3% improvement ($P < .05$) in feed efficiency over control steers (Table 1). No significant differences were observed in ADG, feed intake, or feed efficiency among the implanted treatment groups.

Marbling scores and quality grades were not affected by implant treatment. This is in contrast to other university research showing that implanted cattle may have carcasses with lower USDA quality grades than non-implanted cattle. Steers in our experiment were of Angus or Angus-cross breeding, which suggests that breed type may have had a stronger influence than the implant treatment on quality grade.

Nonimplanted control cattle had lower ($P < .05$) hot carcass weights and smaller ($P < .05$) ribeye areas than implanted cattle. Steers implanted with Finaplix once or twice had larger ($P < .05$) ribeye areas than those implanted with S alone. Further, steers implanted twice with Finaplix had 3.4% larger ($P < .05$) ribeye areas than steers implanted only once. Implanting had no significant effect on dressing percent, kidney knob, or USDA yield grade, although steers implanted with Finaplix had numerically lower yield grades.

Weights of the 9-10-11 rib sections were higher ($P < .05$) for implanted cattle because of an increase ($P < .05$) in weight of both bone and soft tissue. Proximate analysis of the soft tissue from the 9, 10 and 11th rib sections indicated that implanting with Finaplix either once or twice, early or late, in the finishing period had no significant effect on soft tissue chemical composition. However, the soft tissue from steers receiving F was 4.7% higher in protein and 8.2% lower in fat content than control steers. This suggests a trend for more protein and less fat accretion in steers implanted with Finaplix versus nonimplanted steers.

Estimates of palatability as measured by Warner-Bratzler shear and collagen content did not differ among treatments. This suggests that implanting young finishing cattle with S or S + F does not affect beef palatability.

Table 1. Effects of Implant Treatments on Steer Feedlot Performance, Carcass Traits, and 9-10-11 Rib Chemical Composition

		Treatment[a]				
		(1)	(2)	(3)	(4)	(5)
	Day 0:	C	S	S	S + F	S + F
Item	Day 69:	C	S	S + F	S	S + F
Performance Data						
No. pens		4	4	4	4	4
No. steers		16	16	16	16	16
Initial wt, lb		631	632	633	633	634
Final wt, lb[b]		1072	1122	1137	1147	1146
Average daily gain, lb[b]		3.8	4.2	4.3	4.4	4.4
Feed intake, lb DM[b]		19.9	21.1	21.4	21.1	21.1
Gain/feed[b]		.189	.201	.203	.211	.209
Carcass Data						
Dressing percent		64	64	63	64	64
Carcass wt, lb [b]		661	689	693	704	702
Fat thickness, in.		.48	.49	.47	.46	.49
Ribeye area, in^2 [bcd]		11.9	12.4	12.6	12.9	13.2
KPH fat, %		2.3	2.2	2.2	2.1	2.1
USDA yield grade		2.9	2.9	2.8	2.6	2.6
Quality grade [e]		207	202	195	187	195
Choice, %		66	75	62	50	62
Composition Data						
Shear force, lb		8.1	8.6	8.6	9.1	8.2
Soluble collagen, %		3.0	2.1	2.6	2.1	2.7
9-10-11 rib wt, lb [b]		13.0	13.8	13.6	13.9	14.0
Bone wt, lb [b]		2.0	2.1	2.1	2.2	2.2
Soft tissue wt, lb [b]		11.0	11.7	11.5	11.7	11.8
Protein, %		12.9	13.0	13.2	13.4	13.9
Ether extract, %		38.9	36.9	35.7	37.4	33.9
Moisture, %		46.7	48.0	48.8	46.6	50.0

[a]C = Control; F = Finaplix; S = Synovex-S.
[b]Treatment 1 vs treatments 2, 3, 4 and 5 ($P < .05$).
[c]Treatment 2 vs treatments 3, 4, and 5 ($P < .05$).
[d]Treatments 3 and 4 vs treatment 5 ($P < .05$).
[e]0-99 = USDA Standard; 100-199 = USDA Select; 200-299 = USDA Choice.