EVALUATION OF REVALOR®[1] IMPLANTS FOR STOCKER-FINISHING STEERS

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Summary

Revalor® implants (containing trenbolone acetate plus estradiol) were evaluated in a grazing-finishing system using steers with a known previous implant history. Grazing gains were not improved by either Ralgro® or Revalor implants, suggesting that previously implanted steers may not respond to implants during a later growing phase. During the finishing phase, steers implanted with Revalor gained 5.4 to 8.0% faster ($P < .05$) than steers implanted with Synovex-S®. Gain efficiency in the finishing period was improved 4.8% ($P < .10$) for steers receiving no pasture implant and a Revalor implant during the finishing phase (0R), compared with steers receiving Ralgro/Synovex (RS) or Revalor/Revalor (RR) implants in the pasture/feedlot phases. Steers implanted with RR had larger ($P < .05$) ribeye areas than RS steers, with 0R steers intermediate. However, RR steers had a 20 percentage unit reduction ($P < .05$) in carcasses reaching the choice grade compared to RS steers. Revalor can improve steer feedlot performance, but multiple implantation may reduce quality grade.

(Key Words: Revalor, Steers, Growing, Finishing, Performance, Carcass Traits).

Introduction

Previous research has shown that concomitant use of trenbolone acetate (TBA; a synthetic androgenic growth promotant) implants with estrogenic implants sometimes results in synergistic effects on lean tissue growth and performance of feedlot cattle. As a result, some recent commercial research has focused on the development of a single implant containing both TBA and an estrogenic compound. Commercial availability of such an implant would simplify implanting procedures where both TBA and an estrogenic implant are deemed desirable, while eliminating regulatory concerns for feedyard managers regarding concomitant use of TBA with other implants. Revalor® is an implant containing both TBA and estradiol as growth promoting agents. The present study was conducted to evaluate the efficacy of Revalor implants in a summer grazing-finishing production system.

Experimental Procedures

Two hundred forty, crossbred, steer calves were obtained from one source in Clarksville, Texas and shipped to the KSU Beef Research Unit. Calves were weighed upon arrival and housed in four, large, drylot pens until placed on pasture.

Steers were randomly allotted within six weight replicates to one of four feedlot pens (10 head per pen, 240 total steers) before the grazing phase. Treatments (pasture implant/feedlot implant) were: 1) Ralgro/ Synovex-S (RS), 2) no implant/Revalor-S (0R), and 3) Revalor-S/Revalor-S (RR). Revalor implants used in the grazing and finishing phases contained 20/100 and 28/140 mg of estradiol/trenbolone acetate, respectively.

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[1]Revalor is not currently available for commercial use, although FDA clearance is expected in the near future.

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Steers were group-pastured on native Flint Hills range in Chase County, Kansas, on a 1200 acre pasture. Predominant grass species included big bluestem, indiangrass, and switchgrass. At the conclusion of the grazing period, steers were gathered and shipped to Manhattan. Steers were weighed, and finishing phase implants were administered.

Results and Discussion

Pasture phase. There were no differences in daily gain as a result of pasture implant treatment (Table 1). Steers had been previously implanted 76 d before the start of the pasture phase with Synovex-S, because the effective payout rate of Synovex-S is about 85 d. Thus, it is unlikely that this drug continued to be released during the grazing phase of the study. However, lack of response to a growing phase implant that followed a previous implant has been reported in K-State and Nebraska research. Therefore, improved rates of gain should not always be expected from previously implanted animals on a moderate plane of nutrition (pasture or backgrounding situations where gain is less than 2 lb/d).

Feedlot phase. Steers implanted with Revalor during the feedlot phase only (0R) or during the pasture and feedlot phases (RR) gained 8.0 ($P < .05$) and 5.4% ($P < .10$) faster, respectively, than steers implanted with Ralgro during the pasture phase and Synovex-S during the finishing phase (RS). As can be seen in Table 1, most of the difference in final weights and average daily gain among treatments can be attributed to performance differences during the first 35 d on feed (Period 1).

Feed intake during the finishing period was 3.3 and 5.5% ($P < .05$) greater for 0R and RR vs RS steers. Most of the difference in overall feed consumption resulted from differences in Periods 2 and 3. Feed consumption for 0R and RR steers was 4.1 and 6.2% higher than that for RS steers in Period 2 and 6.1 and 7.7% ($P < .05$) higher in Period 3.

Overall, 0R steers were 4.8% more efficient ($P \leq .10$) than RS or RR steers in gain efficiency (gain/feed). Much of the difference in increased overall efficiency for 0R vs RS steers can be explained by differences in Period 1. Poor performance (daily gain and gain/feed) during Period 3 may be partially attributed to extremely harsh environmental conditions for the final 8 d of the period. Mean daily temperatures averaged 12°F, but low temperatures reached -16°F, and wind chill factors at times were below -50°F.

Carcass traits. Hot carcass weights were 9 and 7 lbs heavier ($P > .10$) for 0R and RR vs RS steers (Table 2). Ribeye area, expressed either as total area or area per unit of carcass weight, was greater ($P < .05$) for RR than for RS steers, with 0R steers intermediate. Backfat did not differ among treatments, but KPH fat was greater ($P < .05$) for 0R than for RS steers. Yield grade was lower ($P < .05$) and cutability (% trimmed retail cuts yield) was higher ($P < .05$) for RR than for 0R steers, with RS steers intermediate. Dressing percentage did not differ between treatments.

Degree of marbling was lower ($P = .06$) for RR than for 0R steers, with RS steers intermediate. However, two Revalor implants resulted in a 21 percentage unit reduction ($P < .05$) in Choice carcasses vs RS steers, and a 11.3 percentage unit reduction ($P > .10$) compared to steers implanted with Revalor during the finishing phase only.

Steers implanted twice with Revalor had a hide-pulling score that was 16 and 17.9% greater (more difficult, $P < .05$) than that for RS or 0R steers, respectively. Although highly subjective and empirical in nature, similar results have been observed at K-State for finishing cattle implanted with trenbolone acetate.

Percentage condemnations of livers because of abscesses, flukes, or distoma did

not differ significantly among treatments and were 17.6, 13.1, and 6.8%, respectively. Simple correlations revealed no relationship between any of these causes of liver condemnations and animal performance (weight gain) in this study.

Table 1. Effect of Revalor® on Growing-Finishing Performance of Steers

Item	Pasture implant: Ralgro Feedlot implant: Synovex	None Revalor	Revalor Revalor	SE[b]
Pasture phase (139 d)				
No. steers	59	60	120	
Initial wt, lb[a]	526	524	526	6
Off pasture wt, lb[a]	739	735	734	8
Daily gain, lb	1.53	1.52	1.50	.24
Feedlot phase (88 d)				
No. pens	6	6	12	
No. steers	57	60	114	
Final wt, lb[a]	1073[e]	1098[f]	1088[ef]	8.6
Period 1 (35 d):				
Daily gain, lb	3.76[c]	4.17[d]	4.14[d]	.09
Daily feed, lb DM	20.05	20.12	20.68	.35
Gain/feed	.188[e]	.208[d]	.201[d]	.004
Period 2 (25 d):				
Daily gain, lb	3.70	4.02	3.94	.15
Daily feed, lb DM	22.18[c]	23.08[cd]	23.56[d]	.43
Gain/feed	.167	.174	.167	.006
Period 3 (28 d):				
Daily gain, lb	2.86	2.98	2.79	.12
Daily feed, lb DM	21.11[c]	22.39[d]	22.74[d]	.36
Gain/feed	.135[e]	.133[ef]	.123[f]	.005
Total (0 to 88 d):				
Daily gain, lb	3.50[e]	3.78[f]	3.69[f]	.08
Daily feed, lb DM	20.98[c]	21.68[cd]	22.14[d]	
Gain/feed	.167[e]	.175[f]	.167[e]	.003

[a]Initial and final pasture weights were obtained following an overnight stand, during which steers had no access to feed or water. Final pasture weights were initial feedlot weights.
Interim and final feedlot weights were early morning, full weights pencil shrunk 4%.
[b]Standard error.
[cd]Means in a row without a common superscript differ (P < .05).
[ef]Means in a row without a common superscript differ (P < .10).

Table 2. Effect of Revalor® on Slaughter and Carcass Variables

Item	Pasture implant: Ralgro Feedlot implant: Synovex	None Revalor	Revalor Revalor	SE
Hot carcass wt, lb	683	692	690	4.7
Ribeye area,				
in^2	12.59^{f}	12.85^{fg}	13.17^{g}	.18
in^2/100 lb carcass wt	1.84^{f}	1.86^{fg}	1.92^{g}	.02
Backfat, in	.37	.39	.36	.02
KPH fat, %[a]	2.47^{f}	2.70^{g}	2.55^{fg}	.05
Yield grade[b]	2.48^{fg}	2.54^{g}	2.31^{f}	.08
Cutability, %[b]	51.0^{fg}	50.9^{f}	51.4^{g}	.18
Dressing percentage	63.7	63.0	63.5	.39
Marbling[c]	4.81^{hi}	4.90^{i}	4.77^{h}	.05
Percent Choice	61.4^{g}	51.7^{fg}	40.4^{f}	6.28
Skeletal maturity[d]	1.67	1.74	1.69	.03
Hide pull score[e]	3.18^{f}	3.13^{f}	3.69^{g}	.09

[a]Kidney, pelvic, and heart fat.
[b]Calculated using USDA equations.
[c]$Slight^{50}$ = 4.5, $Small^{50}$ = 5.5, etc.
[d]A^{50} = 1.5, B^{50} = 2.5, etc.
[e]Scale of 1 to 5; 1 = easy pull, 5 = very difficult.
[fg]Means in a row without a common superscript differ (P < .05).
[hi]Means in a row without a common superscript differ (P = .06).