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COMBINATIONS OF SYNOVEX¹ AND FINAPLIX² FOR YEARLING STEERS

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CATTLE 90-10

Summary

One hundred twenty-three yearling black baldy steers were fed in one pen for 123 days at a commercial feedlot near Kimball, South Dakota. On day 1 in the feedlot, 53 steers were implanted with Synovex-S, 53 steers were implanted with the combination of Synovex-S and Finaplix-S and 17 steers received no implant. On day 60 in the feedlot, 18 of the Synovex-S steers and 18 of the combination steers were reimplanted using Synovex-S. Also on day 60, 18 of the Synovex-S steers and 18 of the combination steers were reimplanted using the combination of Synovex-S and Finaplix-S. The remaining steers were not reimplanted. Average daily gain, carcass weight, rib fat thickness, rib eye area and numerical yield grade were increased ($P < .05$) while marbling score and the percentage of cattle grading Choice were reduced ($P < .10$) for implanted steers as compared with nonimplanted steers. Steers implanted on day 1 with the combination gained faster ($P < .0246$) and exhibited larger ($P < .0168$) rib eyes than steers implanted on day 1 with only Synovex-S. Reimplanting on day 60 did not significantly improve average daily gain above day 1 implanting only. Percentage of implants found in acceptable position with no infection or encapsulation 2 wk postimplanting was 85.31 for Synovex-S and 60.23 for Finaplix-S.

(Key Words: Steer, Estradiol, Trenbalone Acetate, Feedlot, Carcass.)

Introduction

Finaplix is the newest implant available for use in feedlot cattle. The active ingredient in Finaplix is trenbelone acetate. When used as the sole implant for cattle, Finaplix administration results in similar or slightly lower improvements in performance as does implanting with estrogenic implants such as Ralgro and Synovex.

Using Finaplix in combination with an estrogenic implant has resulted in tremendous improvements in performance of feedlot cattle as compared with using an estrogenic implant alone and has become a common practice in the commercial cattle feeding industry. However, several reports have indicated that the percentage cattle grading Choice is reduced when the combination of Finaplix and an estrogenic implant are used. Depending upon when and how the cattle are sold, reduced propensity to grade Choice would have serious economic consequences for cattle feeders.

The objectives of this trial were to measure differences in average daily gain and carcass characteristics between cattle implanted with the combination of Finaplix plus Synovex versus cattle implanted with Synovex.

Materials and Methods

One hundred twenty-three yearling, black baldy steers (784 lb) were transported from the Range and Livestock Research Station located near Philip, SD, to R and L Feedyard, Kimball, SD. Upon arrival at the feedlot (8:00 pm) cattle were allowed overnight access to long-stem grass hay without water. The following morning (8:00 am), cattle were weighed, injected with seven-way clostridial bacterin and vaccinated for IBR and PI₃.

Cattle were stratified according to the last weight taken at Cottonwood (8 days preshipment) and randomly assigned to seven treatment groups (Figure 1). On day 1, 53 steers were implanted with Synovex-S, 53 steers were implanted with the combination of Finaplix-S and Synovex-S and 17 steers received no implant. On day 60, 18 of the steers previously implanted with Synovex-S and 18 of the steers previously implanted with the combination of

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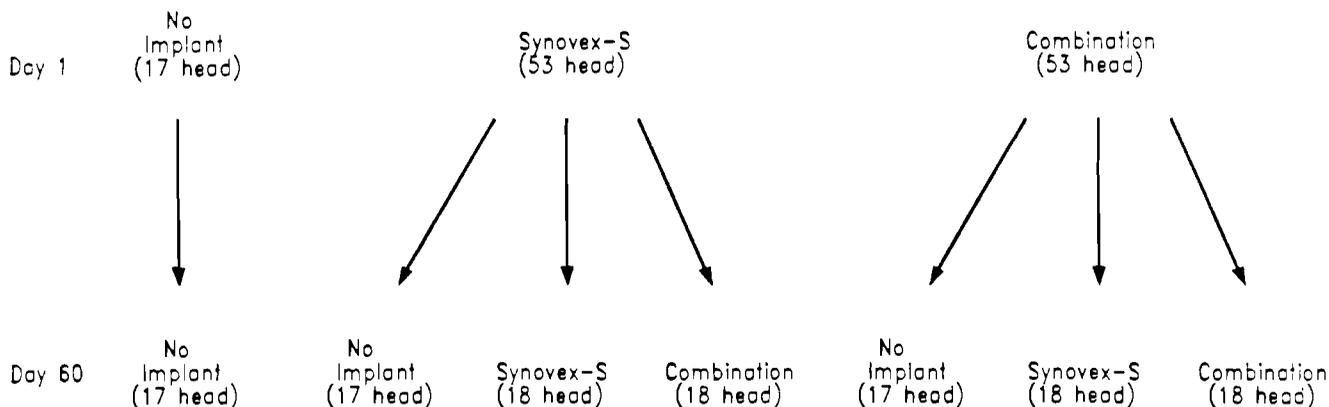


Figure 1. Implant treatment regimens used for steers.

Finaplix-S and Synovex-S were reimplanted with Synovex-S. Eighteen of the steers previously implanted with Synovex-S and 18 of the steers previously implanted with the combination of Finaplix-S and Synovex-S were reimplanted with the combination of Finaplix-S and Synovex-S. The remaining steers were not reimplanted.

Fourteen days postimplanting all cattle were run through the headgate and ears were palpated to determine the effectiveness of implant administration. A score of 0 to 5 was assigned to each implant site. A score of 0 meant that the implant was in place, in proper alignment and that there was no drainage or encapsulation present. A score of 1 meant that the implant was damaged in some way either crushed or out of proper alignment. Implant sites that scored a 2 showed signs of encapsulation as evidenced by a solid swelling with no drainage. Implant sites that scored a 3 were infected and exhibited drainage or a crusted exudate. A score of 4 meant that the implant site was infected and that the implant had been expelled. A score of 5 represented the situation where the implant was missing and no evidence of infection was observed.

Diets fed to steers are shown in Table 1. Steers were adjusted to the finishing diet by feeding diet 1 for 10 days and diet 2 for 7 days. All cattle were slaughtered on the same day after 123 days on feed. Cattle were weighed full at 60 days. A pencil shrink of 4% was applied to these weights prior to computing average daily gain for the first and second half of the trial. Final weight used to compute performance data was calculated by dividing hot carcass weight by the dressing percentage (62%) of the entire group.

Carcass data were collected 24 hours postslaughter. The USDA grader called marbling scores and estimated the percentage kidney, heart and pelvic fat. Rib fat was measured with a steel probe and rib eye area was estimated using a grid. Cattle were not regraded. The first marbling score called by the grader was used in the analysis.

Data were analyzed according to analysis of variance procedures for a completely randomized design. Differences in percentage Choice carcasses in each treatment were tested by Chi square analysis procedures. Means were separated using orthogonal comparisons. Comparisons of interest for the average daily gain and carcass data were (1) no implant versus implant; (2) Synovex-S on day 1 versus the combination on day 1; (3) reimplant versus no reimplant; (4) reimplant with Synovex-S versus reimplant with the combination; (5) Synovex-S on day 1, Synovex-S on day 60 versus the combination on day 1, Synovex-S on day 60; and (6) Synovex-S on day 1, Synovex-S on day 60 versus the combination on day 1, the combination on day 60. The comparison of interest for the implant site data was Synovex-S versus Finaplix-S.

Results and Discussion

Average performance of the pen of cattle was outstanding. Feed consumption for the pen averaged 28.60 lb of dry matter per head daily. Average daily gain was 4.39 lb per head. Feed conversion averaged 6.51 lb of dry matter per pound of gain. Percentage of the steers grading Choice or better was 71.54.

TABLE 1. COMPOSITION OF DIETS FED TO STEERS

Item	Diet		
	1	2	Finish
Ingredient ^a			
High moisture corn	29.09	48.14	66.75
Corn silage	67.90	48.15	38.62
Supplement ^b	2.67	3.37	4.29
Mineral supplement ^c	.17	.17	.17
Limestone		.17	.17
Nutrient analysis ^d			
Dry matter, %	47.69	58.66	69.49
Crude protein, %	12.10	12.27	12.52
Calcium, %	.54	.59	.55
Phosphorus, %	.35	.36	.37
NE _m , Mcal/cwt	83.69	89.93	94.86
NE _g , Mcal/cwt	53.94	59.02	62.37

^a Percentage as fed.

^b Sup-R-Lix, Purina Mills, Inc., St. Louis, MO.

^c Dry matter basis.

Weight and average daily gain of the cattle are displayed in Table 2. Implanted steers gained more ($P < .0001$) weight per day than nonimplanted steers during the first 60 days on feed (4.64 vs 3.74 lb per head). Differences in average daily gain for Synovex-S implanted cattle and cattle implanted with the combination were not significant.

During the last 63 days on feed, implanted cattle gained significantly ($P < .0031$) faster than nonimplanted cattle (4.25 vs 3.73 lb per head daily). Cattle that were reimplanted gained more ($P < .0059$) weight daily than cattle that received one implant (4.38 vs 4.00 lb per head). Cattle implanted on day 1 and day 60 with the combination gained weight more ($P < .0102$) rapidly than cattle implanted on day 1 and day 60 with Synovex-S (4.72 vs 4.14 lb per head daily). Cattle implanted with the combination on day 1 gained more ($P < .0049$) rapidly the final 63 days than cattle implanted with Synovex-S on day 1 (4.44 vs 4.06 lb per head daily). The reason for this carryover response is not apparent.

Average daily gain for the entire feeding period was significantly ($P < .0001$) greater for implanted steers than for nonimplanted steers (4.44 vs 3.73 lb per head daily). Steers implanted on day 1 with the combination of Finaplix-S and Synovex-S gained significantly ($P < .0246$) faster than steers implanted with Synovex-S (4.60 vs 4.32 lb per head daily). Steers reimplanted with the combination gained more ($P < .0236$) rapidly than steers reimplanted with Synovex-S (4.59 vs 4.33 lb per head daily). However, over both reimplant

regimens, reimplanting did not significantly improve average daily gain (4.46 vs 4.40 lb per head). Steers implanted twice with the combination gained significantly more weight than steers implanted twice with Synovex-S (4.74 vs 4.20 lb per head daily).

Carcass characteristics are shown in Table 3. Carcass weight ($P < .003$, 827 vs 779 lb), carcass rib fat ($P < .0007$, .60 vs .44 inches), rib eye area ($P < .0117$, 12.96 vs 12.28 in.²) and numerical yield grade ($P < .0338$; 3.47 vs 3.10 units) were all significantly increased, while marbling score ($P < .0802$, 5.15 vs 5.29 units) and the percentage of cattle grading Choice ($P < .10$, 68.87 vs 88.24%) were reduced by implanting. Implanting on day 1 with the combination increased ($P < .0168$) rib eye area as compared to implanting with only Synovex-S (13.20 vs 12.72 in.²). Implanting on day 60 with the combination increased ($P < .0291$) rib eye area as compared to implanting with Synovex-S (13.35 vs 12.82 in.²). Implanting twice with the combination increased rib eye area as compared to implanting twice with Synovex-S (13.67 vs 12.47 in.²).

Table 4 displays the implant site score information. Eighty-five percent of the Synovex-S implants were administered properly compared with only 60% of the Finaplix-S implants. The same experienced operator administered both implants. However, all Synovex-S implants were placed in the right ear with the SX-10¹ implanting gun with a retractable needle while all Finaplix-S implants were placed in the left ear with the implanting device

TABLE 2. WEIGHT AND AVERAGE DAILY GAIN OF STEERS

Item	Treatment ^a							SEM
	NI	S	SS	SC	C	CS	CC	
Number of steers	17	17	18	18	17	18	18	
Initial wt, lb	793	801	785	770	795	775	773	
Wt at day 60, lb	1060	1140	1083	1096	1125	1087	1104	
Final wt, lb ^b	1257	1342	1306	1322	1346	1329	1363	
Avg daily gain, lb ^{cd}	3.74	4.89	4.25	4.70	4.75	4.47	4.77	.17
Avg daily gain, lb (day 1-60) ^{ce}	3.73	3.85	4.14	4.20	4.14	4.45	4.72	.16
Avg daily gain, lb (day 1-123) ^f	3.73	4.35	4.20	4.44	4.44	4.46	4.74	.12

^a NI = no implant, S = Synovex-S day 1, SS = Synovex-S day 1 and Synovex-S day 60, SC = Synovex-S day 1 and the combination of Synovex-S and Finaplix-S day 60, C = Combination on day 1, CS = Combination day 1 and Synovex-S day 60, CC = combination day 1 and combination day 60.

^b Calculated from hot carcass weight divided by .62 (standard dressing percent).

^c Weight on day 60 was shrunk by 4% to compute average daily gain.

^d No implant vs others (P<.0001).

^e No implant vs others (P<.0031).

S, SS and SC vs C, CS and CC (P<.0049).

S and C vs SS, SC, CS and CC (P<.0059).

SS vs CC (P<.0102).

^f No implant vs others (P<.0001).

S, SS and SC vs C, CS and CC (P<.0246).

SS and CS vs SC and CC (P<.0236).

SS vs CC (P<.0011).

TABLE 3. CARCASS CHARACTERISTICS OF STEERS

Item	Treatment ^a							SEM
	NI	S	SS	SC	C	CS	CC	
Hot carcass wt, lb ^b	779	832	810	819	834	824	845	14.47
Fat thickness, inches ^c	.44	.64	.58	.59	.59	.58	.59	.04
Rib eye area, in. ^{2d}	12.28	12.68	12.47	13.02	12.78	13.16	13.67	.24
Marbling score, units ^{ef}	5.29	5.19	5.13	5.26	5.13	5.21	4.96	.08
Kidney, heart and pelvic fat, %	2.41	2.47	2.44	2.56	2.38	2.42	2.44	.07
Yield grade, units ^g	3.10	3.70	3.51	3.42	3.54	3.36	3.31	
Percentage Choice ^h	88.24	76.47	66.67	72.22	64.71	88.89	44.44	

^a NI = no implant, S = Synovex-S day 1, SS = Synovex-S day 1 and Synovex-S day 60, SC = Synovex-S day 1 and the combination of Synovex-S and Finaplix-S day 60, C = Combination on day 1, CS = Combination day 1 and Synovex-S day 60, CC = combination day 1 and combination day 60.

^b No implant vs others (P<.0030), SS vs CC (P<.0860).

^c No implant vs others (P<.0007).

^d No implant vs others (P<.0117).

S, SS and SC vs C, CS and CC (P<.0168).

S and C vs SS, SC, CS and CC (P<.0985).

SS and CS vs SC and CC (P<.0291).

SS vs CS (P<.0454).

SS vs CC (P<.0006).

^e 4.00 = slight^o, 5.00 = small^o.

^f No implant vs others (P<.0802).

^g No implant vs others (P<.0338).

^h Control vs others (P<.1000).

SS and CS vs SC and CC (P<.0770).

TABLE 4. IMPLANT SITE SCORE

Score ^a	Implant	
	Synovex-S	Finaplix-S
0	85.31 ^b	60.23
1	3.39	2.27
2	6.78	15.91
3	1.13	4.55
4	1.69	7.95
5	1.69	9.09

^a 0 = acceptable, in proper alignment, no drainage or encapsulation present; 1 = crushed or out of proper alignment; 2 = encapsulated, solid swelling with no drainage; 3 = infected, drainage or crusted exudate; 4 = implant site had been infected and implant expelled; 5 = implant missing and no evidence of infection.

^b Chi square = 26.92, 4 d.f., P<.005.

designed for Finaplix. The retractable needle has been associated with fewer implanting problems. In addition, administering implants in the left ear may have been awkward for this particular operator. Planter needles were not wiped with disinfectant between individual cattle. Wiping the needle clean between cattle has been shown to lower the incidence of infection. The Finaplix-S used in this study contained lactose in the carrier. This may provide a suitable media for bacteria, increasing infections if proper sanitation is not exercised.

Using the combination of Finaplix-S and Synovex-S for feedlot steers will likely improve average daily gain, feed efficiency and carcass muscling. However, quality grade may be reduced and carcass weight may be increased if the combination is used aggressively. Discounts for heavy carcasses, the price spread between Choice and Select carcasses and how the cattle are marketed need to be considered when deciding whether or not to use the combination for feedlot steers.