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D.L. Whittington
South Dakota State University

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COMPARISON OF RALGRO, COMPUDOSE AND SYNOVEX-C
IMPLANTS ON THE GROWTH PERFORMANCE
OF SUCKLING CALVES

D. L. Whittington
Department of Animal and Range Sciences

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Summary

Growth response to a single implant was measured in suckling steer and heifer calves grazing native range on three ranches in South Dakota. The steers (628 head) were randomly allotted on each ranch to either a Ralgro, Compudose, Synovex-C or no implant treatment. The heifers (714 head) were randomly allotted on each ranch to either a Ralgro, Synovex-C or no implant treatment. Implants were administered according to manufacturers' recommendations. The calves were weighed at the time of implanting and again 163 days later at weaning. The ears of steers receiving a Compudose implant were palpated at weaning to determine retention. The weight gain advantage of implanted steers over controls ranged from 4.5 to 31.5 lb. Steers receiving either a Ralgro or Synovex-C implant gained more weight ($P < .05$) than controls (13.5 and 16.7 lb., respectively). Weight gains of steers implanted with Compudose did not differ ($P > .05$) from controls. The weighted average improvement of 12.2 lb. on implanted steers was worth \$8.78. The weight gain advantage of implanted heifers over controls ranged from 8.3 to 28.6 lb. Heifers receiving either a Ralgro or Synovex-C implant gained more weight ($P > .05$) than controls (18.5 and 20.6 lb., respectively). The weighted average improvement of 19.5 lb. on implanted heifers was worth \$13.26. The retention rate of Compudose implants ranged from 79.1 to 89.0%, with an overall average of 84.8%. In conclusion, all the implants appeared to give an anabolic response, with the Ralgro and Synovex-C responses being greater ($P < .05$) than controls. Differences between the weight gains of implant groups were not detectable ($P > .05$).

(Key Words: Implants, Zearalanol, Estradiol, Progesterone/Estradiol Benzoate, Suckling Calves.)

Introduction

Growth implants are described as 'anabolic compounds.' This simply means they promote constructive metabolism, generally increasing protein deposition. This is accomplished by low levels of estrogenic or hormone-like substances which increase pituitary size and the secretion of growth hormone, which in turn increase protein deposition. Estrogens are widespread in our normal physiological environment and in our food supply. In the strictest sense, an estrogen is a phenolic steroid which is synthesized mainly in the ovary but also in the testes and the adrenal cortex. The primary function of estrogens is to affect various facets of female reproduction and secondary sexual characteristics. Extensive research has shown that estrogens and substances with estrogenic activity improve the growth rate and feed conversion of cattle when administered at relatively low levels.

Two compressed tablet estrogenic anabolics, zearalanol (Ralgro) and estradiol + progesterone (Synovex-C), and an estradiol-impregnated silicone rubber implant (Compudose) are used extensively in suckling calves to improve growth performance. Ralgro implants consist of three pellets containing 24 mg of zearalanol, a fermentation production of *Gibberella Zea*, which exhibits estrogenic activity and is approved as a growth implant for newborn steer and heifer calves. Synovex-C consists of four pellets containing 100 mg progesterone and 10 mg estradiol benzoate and is approved as a growth implant for steer and heifer calves over 45 days of age. Compudose, a silicone rubber implant, contains 24 mg estradiol and is coated with .7 mg of oxytetracycline powder as a local antibacterial and is approved for steers from birth and feedlot heifers.

The decision as to which implant to use or whether or not implants are beneficial is a real issue to our ranchers. With the addition of new implants on the market, this question is more confusing. Thus, additional large scale field comparisons are needed to illustrate the benefits from implanting as well as to compare implants. The objective of this study was to compare the growth performance of suckling calves receiving a single implant of either Ralgro, Compudose or Synovex-C.

Materials and Methods

The trials were conducted on three ranches in South Dakota. In total 628 steers were randomly allotted to receive either a Ralgro, Synovex-C or Compudose implant or no implant. The 714 heifers were randomly allotted to receive either a Ralgro or Synovex-C implant or no implant. The calves ranged from 4 to 8 weeks of age at the time of implanting. Implanting was one of several processes performed on the calves at this time. The processing consisted of eartagging, branding, dehorning, castrating, vaccinating, flytagging and weighing. Processing other than implant allocation was the same for all calves on the same ranch. The calves were pastured on native range with their dams for an average of 163 days before weaning, at which time all the calves were again individually weighed and those receiving Compudose were palpated for retention. There were no calves from first calf heifers used in the study. The breeding of the calves and their dams differed from ranch to ranch but was uniform on the same ranch.

All implants were applied only once at the initiation of the trials. Both Compudose and Synovex-C were administered subcutaneously in the median surface of the ear. Ralgro was administered subcutaneously behind the ear at the base of the head.

The data are reported by sex for each ranch location with a summary for all ranches. Analysis of variance and least significant differences were applied to the data to test for differences between treatments.

Results and Discussion

Although differences were not significant ($P > .05$) on all ranches, the steer calves receiving an implant did gain more than the control steers (table 1). The weight gain advantage of implanted steers over controls ranged from 4.5 to 31.5 lb. When all the data were combined, the ranking of response in the order of greatest to least to an implant was Synovex-C, then Ralgro followed by Compudose. Steers receiving either a Ralgro or Synovex-C implant gained more weight ($P < .05$) than nonimplanted steers (13.5 and 16.7 lb, respectively). Weight gains of

steers implanted with Compudose did not differ ($P > .05$) from controls. Differences between the weight gains of implanted groups were not detectable ($P > .05$). The weighted average improvement of 12.2 lb on implanted steers was worth \$8.78 on a \$72 steer calf market or a total of \$5,516.35 for the 628 steers in this study.

Palpation of the ears of Compudose-implanted steers revealed that a substantial number of implants were missing at weaning. The retention rate ranged from 79.1% to 89.0% with an overall average of 84.8% (table 1). When the data on steers which lost their Compudose implant were removed, anabolic response was more similar to steers implanted with Ralgro and Synovex-C.

Heifer calves receiving an implant gained significantly ($P < .05$) more weight than controls in all cases except the Ralgro treatment on the Corson County ranch (table 2). The weight gain advantage of implanted heifers over controls ranged from 8.3 to 28.6 lb. Both Ralgro and Synovex-C consistently improved weaning weights ($P < .05$) over nonimplanted heifers (18.5 and 20.6 lb, respectively). Differences between the weight gains of implant groups were not detectable ($P > .05$). The weighted average improvement of 19.5 lb on implanted heifers was worth \$13.26 on a \$68 heifer calf market or a total of \$9,467.64 for the 714 heifers in this study.

In conclusion, all the implants appeared to give an anabolic response with the Ralgro and Synovex-C treatments being greater ($P < .05$) than controls. Implanting suckling calves is an economical production practice for ranchers engaged in commercial beef production.

TABLE 1. PERFORMANCE OF SUCKLING STEER CALVES RECEIVING ONE IMPLANT OF EITHER RALGRO, COMPUDOSE OR SYNOVEX-C

Ranch	Item	Implant treatments (lb)				P**
		Ralgro	Compudose	Control	Synovex-C	
Corson County (177 days)						
	No. calves	53	48	(38)*	47	47
	Beg. wt.	125.7	128.4		122.7	122.8
	Weaning wt.	482.2	475.0		464.8	470.1
	Gain	356.5	346.6	(356.2)*	342.1	347.3
	Advantage	14.4	4.5	(14.1)*	0	5.2
Jones County (164 days)						
	No. calves	63	64	(57)*	61	62
	Beg. wt.	185.1	188.3		198.6	185.7
	Weaning wt.	514.4	514.1		516.0	519.5
	Gain	329.4ab	325.7ab	(328.4)*	317.4a	333.7b
	Advantage	12.0ab	8.3ab	(11.0)*	0a	16.3b
Faulk County (163 days)						
	No. calves	47	46	(39)*	46	44
	Beg. wt.	174.7	154.3		164.8	172.4
	Weaning wt.	567.3	539.6		542.4	581.5
	Gain	392.6ab	385.3ab	(391.9)*	377.6a	409.1b
	Advantage	15.0ab	7.7ab	(14.3)*	0a	31.5b
Summary						
	No. calves	163	158	(134)*	154	153
	Beg. wt.	162.7	160.2		165.3	162.5
	Weaning wt.	519.2	509.6		508.3	522.2
	Gain	356.4bc	349.4ac	(354.7)*	342.9a	359.6bc
	Advantage	13.5bc	6.5ac	(11.8)*	0a	16.7bc

a,b,c Means in the same row not sharing a common superscript differ ($P < .05$).

*Figures in parenthesis exclude animals which lost their implant.

**Probability of attaining a greater F-value from AOV.

TABLE 2. PERFORMANCE OF SUCKLING HEIFER CALVES RECEIVING ONE IMPLANT OF EITHER RALGRO OR SYNOVEX-C

Ranch	Item	Implant treatments (1b)			P*
		Ralgro	Control	Synovex-C	
Corson County (177 days)					
	No. calves	75	71	76	
	Beg. wt.	115.4	119.3	117.9	.26
	Weaning wt.	456.6	452.1	465.7	.13
	Gain	341.1ab	332.8a	347.8b	.03
	Advantage	8.3ab	0a	15.0b	.03
Jones County (164 days)					
	No. calves	105	108	99	
	Beg. wt.	181.1	179.1	177.2	.62
	Weaning wt.	498.4	477.8	497.9	.001
	Gain	317.3b	298.1a	320.7b	.0001
	Advantage	19.2b	0a	22.6b	.0001
Faulk County (163 days)					
	No. calves	61	62	57	
	Beg. wt.	157.5	163.0	165.3	.44
	Weaning wt.	543.4	520.4	545.6	.02
	Gain	385.9b	357.3a	380.2b	.0001
	Advantage	28.6b	0a	22.9b	.0001
Summary					
	No. calves	241	241	232	
	Beg. wt.	154.7	157.6	154.9	.64
	Weaning wt.	496.8	481.2	499.1	.001
	Gain	342.1b	323.6a	344.2b	.0001
	Advantage	18.5b	0a	20.6b	.0001

a,b Means in the same row not sharing a common superscript differ ($P < .05$).
 *Probability of attaining a greater F-value from AOV.