# SYNOVEX-C OR RALGRO IMPLANTS FOR NURSING CALVES

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## Story in Brief

Two trials were conducted to evaluate the efficacy of the Synovex calf implant (Synovex-C, at this time an experimental implant) or Ralgro for improving growth rate of suckling calves. A total of 366 suckling calves, both steers and heifers, received either the Synovex-C implant (n=122), the Ralgro implant (36 mg of zeranol) as a positive control (n=121), or remained as nonimplanted, negative controls (n=123). All calves were weighed on the day they were implanted, were pastured with their dams, and were weighed again either 104 or 106 days after implanting.

Calves implanted gained faster (1.66 lb/day or 1.65 lb/day, P<.01) than nonimplanted calves (1.56 lb/day,P<.01). These results demonstrated that both the Synovex-C implant and Ralgro were highly effective for improving growth rates of suckling calves.

## Introduction

Synovex implants have been used in the U.S. for many years to improve average daily gain (ADG) and feed efficiency of both stocker and feedlot cattle. Expansion of the use of Synovex implants to suckling calves could further improve the overall efficiency of beef production and, consequently, benefit producers and consumers alike. Three trials were conducted in different geographic areas of the United States to determine the optimum dose of either Synovex-S (20 mg of estradiol benzoate plus 200 mg of progesterone) or Synovex-H (20 mg of estradiol benzoate plus 200 mg of testosterone propionate) for suckling calves (Spires et. al., 1983). From those trials, four pellets of Synovex-S, containing 10 mg of estradiol benzoate plus 100 mg of progesterone, emerged as the formulation and dose of choice (Spires, 1982a). Subsequent studies with that implant, now named Synovex-C, in both the U.S. (Spires, 1982b) and Canada (Spires 1983a, b) have demonstrated that it is an excellent anabolic implant for suckling calves.

This report summarizes the results of two trials conducted in Oklahoma in which the ADG of suckling calves implanted with either Synovex-C or Ralgro was compared with nonimplanted controls.

## Materials and Methods

Implant cartridges of the Synovex-C implant were prepared before the study by removing four pellets from the standard 8-pellet Synovex-S cartridges. Crossbred suckling beef calves weighing between 85 and 450 lb were selected, and all bull calves were castrated at the start of the study. Calves were kept with their dams on native pastures at two ranches in Oklahoma. Ninety steers and 82 heifers were used at the

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northeastern Oklahoma location. All calves were ear tagged and were assigned randomly, within sex, to one of three treatments - Synovex-C, Ralgro or nonimplanted control. Calves at the Northeastern location also were vaccinated with a combination Clostridium-Pasteurella bacterin and a Leptospira pomona bacterin at the start of the study.

The Synovex calf implants were placed subcutaneously in the top central one-third of the ear using the Synovex Implanter. Ralgro implants were placed at the base of the ear using the Ralogun pellet injector, according to the manufacturer's directions. Each calf was weighed on the day it was implanted and again either 104 or 106 days after implantation.

Average daily gain for each animal was calculated and these data were analyzed by analysis of variance. A separate statistical analysis was conducted for each individual trial (Tables 1 & 2) and also for the combined data (Table 3). In the case of significant treatment effects, least significant difference (LSD) tests were carried out to compare each implanted group to the nonimplanted controls (one-sided) and to compare the performance of calves implanted with Synovex-C to those implanted with Ralgro (two-sided).

## Results and Discussion

Calves in south-central Oklahoma gained slightly faster than calves at the Northeastern location (Tables 1 and 2, $P<.001$). However, no treatment x location, sex x location nor treatment x sex interactions were detected by statistical analysis, indicating that both steer and heifer calves responded similarly to anabolic implants at both locations. Calves implanted with Synovex-C gained an average of .10 lb/day more than nonimplanted calves at both the South-central and

**Table 1. Performance of calves implanted with anabolic implants in south-central Oklahoma, summer 1983.[a,b]**

| Variable | Control | Synovex-C | Ralgro | SD |
|---|---|---|---|---|
| Number of calves | | | | |
| Steers | 30 | 31 | 29 | |
| Heifers | 27 | 27 | 28 | |
| Initial weight, lb | | | | |
| Steers | 243 | 240 | 220 | 48 |
| Heifers | 225 | 232 | 226 | 42 |
| Final weight, lb | | | | |
| Steers | 412 | 416 | 397 | 68 |
| Heifers | 390 | 410 | 406 | 64 |
| ADG, lb[c] | | | | |
| Steers | 1.62 | 1.70(4.9)[d] | 1.70(4.9) | .29 |
| Heifers | 1.60 | 1.71(6.9) | 1.72(7.5) | .30 |

[a]Owner: Mr. Lloyd Ely, Velma, Oklahoma.
[b]Monitors Ken Apple and Don Gill.
[c]Length of trial was 104 days.
[d]Numbers in parentheses are percent increase over control.

**Table 2. Performance of calves implanted with anabolic implants in north-eastern Oklahoma, summer 1983.[a,b]**

| Variable | Control | Synovex-C | Ralgro | SD |
|---|---|---|---|---|
| Number of calves | | | | |
| Steers | 32 | 30 | 30 | |
| Heifers | 34 | 34 | 34 | |
| Initial weight, lb | | | | |
| Steers | 242 | 246 | 236 | 65 |
| Heifers | 223 | 221 | 210 | 70 |
| Final weight, lb | | | | |
| Steers | 407 | 424 | 409 | 68 |
| Heifers | 379 | 388 | 377 | 68 |
| ADG, lb[c] | | | | |
| Steers | 1.56 | 1.68(7.7)[d] | 1.64(5.1) | .24 |
| Heifers | 1.48 | 1.57(6.1) | 1.57(6.1) | .28 |

[a] [b]Owner: Mr. Tom Tate, Pawhuska, Oklahoma.
[c] Monitors Kent Barnes, Bruce Peverly and Don Gill.
[d]Length of trial was 106 days.
Numbers in parentheses are percent increase over control.

**Table 3. Performance of calves implanted with anabolic implants in two combined studies in Oklahoma, summer 1983.[a]**

| Variable | Control | Synovex-C | Ralgro | SD |
|---|---|---|---|---|
| Number of calves | | | | |
| Steers | 62 | 61 | 59 | |
| Heifers | 61 | 61 | 62 | |
| Initial weight, lb | | | | |
| Steers | 242 | 243 | 228 | 57 |
| Heifers | 224 | 226 | 217 | 60 |
| Final weight, lb | | | | |
| Steers | 409 | 420 | 404 | 68 |
| Heifers | 384 | 397 | 390 | 66 |
| ADG, lb[c,d] | | | | |
| Steers | 1.59 | 1.69(6.3)[b] | 1.67(5.0) | .26 |
| Heifers | 1.53 | 1.63(6.5) | 1.64(7.2) | .29 |

[a]Treatment means of ADG for steers and heifers, combined, were 1.56, 1.66, and 1.66 lb/day for Control, Synovex-C and Ralgro, respectively. Calves implanted with either Synovex-C or Ralgro [b]implants improved rates of gain than nonimplanted calves ($P<.01$).
Numbers in parentheses are percent increase over control.

Northeastern locations (Tables 1 and 2). This represented an overall 6.4 percent increase in ADG of calves as a result of implanting with Synovex-C (Table 3). A similar improvement in ADG was observed for calves implanted with Ralgro. In five previous trials using more than 600 calves, Synovex-C implants improved ADG by 6.5 percent (from 1.70 to 1.81 lb/day) in heifer calves (Spires, 1982b). Results of the present studies lend additional evidence supporting the efficacy of Synovex-C for improving the growth rate of suckling steer and heifer calves.

## Literature Cited


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