

COMPUDOSE® - A NEW GROWTH-PROMOTING IMPLANT

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Anabolic or growth-promoting subcutaneous implants have been used in the cattle industry for a number of years. Increased daily gains usually result in improved feed utilization. The resulting improvement in feed efficiency is an important step in maximizing the efficiency of red meat production. Various implants have been very effective in promoting rapid weight gains.

Diethylstilbestrol (DES) was the most economic, provided the most consistent results and was the most widely used of the anabolic implants before being banned and removed from the market. Fortunately we were left with two alternatives in Ralgro® and Synovex®. Now it appears we soon may have a third choice on the market called Compudose®.

Compudose® implants contain estradiol-17 β which has been known to have growth-promoting properties for many years. The active ingredient is embedded in silicone rubber, which forms a rather large implant about .2 inches in diameter and 1.2 inches long. The implant is designed to deliver a rather specific daily dosage over a specified length of time. Like the other implants, Compudose® is administered subcutaneously in the ear with an implant tool.

Two Compudose® studies have been conducted at Squaw Butte. In a 1976 study, calves, shortly after birth were implanted with an implant designed to last more than a year until the animal reached a choice slaughter grade. In a 1980 study, an implant designed to last 200 days was compared to a Ralgro® implant. The two studies will be briefly described in this paper.

BIRTH TO SLAUGHTER STUDY

The objectives of this study were to evaluate Compudose® delivering various levels of estradiol-17 β to steers during the suckling, growing and finishing phases of production under a single implant regimen and with two forms of implant. Early work with Compudose® was concerned with the most effective levels and form of the implant. For this paper, the higher level treatments (30.9 and 47.7 μ g) were combined and the form ignored. These were the most effective levels in this study and the form of implant did not affect results.

Sixty steer calves, averaging 59 days of age and 172 pounds, were stratified by breed, weight and age of dam to groups and randomly assigned to treatment. Calves ranged in age from 10 to 80 days at the time of implantation. Control calves received a placebo implant formulated from the nonmedicated silicone rubber. Implants were given once, at the initiation of the study, and were weighed individually before implantation. At the

end of the study the implants were removed with a surgical cutting edge tool designed immobilize the implant in a groove. Implants were washed, dried and weighed to determine daily dosage rates.

The study began May 5 with calves born in March and April. Cow-calf pairs were grazed on wet meadow pastures to June 17 when they were moved to a mixed-conifer forest range. Calves were weaned on September 17 and put on alfalfa-grass hay aftermath pastures during the post-weaning period. During the wintering period, the steers were fed 2 pounds of barley and an appropriate amount of alfalfa hay, based on body weight to maintain approximately 1.5 pounds daily gain. The following spring, steers grazed improved irrigated pasture and received 1.5 pounds of barley. During the last month of the pasture period, barley was gradually increased to 7 pounds to lead into the feedlot phase. During the finishing phase, the animals were fed a standard feedlot ration with barley the primary concentrate and meadow hay providing roughage. Feed intake was measured during this time.

Gain results are presented in Table 1. Compudose® provided a positive gain response over the controls throughout the trial. Overall gains were increased 8 percent over the controls with the implants. Feed efficiency during the finishing phase was not improved with the implant because the increased gain was accompanied by increased feed intake. However, the implanted steers were heavier going into the feedlot, so increased intake was expected. Increased maintenance requirements of the heavier animals throughout the finishing period may be the reason average feed efficiency was not improved. Implanted steers were more than 70 pounds heavier than the controls by the end of the trial.

Table 1. Average daily gain of steers over the 499-day study period^{1/}

Treatment	Suckling	Post-weaning	Wintering	Pasture	Finishing	Overall
-----lb-----						
Control	2.23	1.28	1.43	2.38	3.26	1.98
Compudose	2.44	1.36	1.53	2.44	3.49	2.14

^{1/} The number of days for each phase was 135, 61, 173, 65 and 65, respectively, for the suckling, post-weaning, wintering, pasture and finishing periods.

PASTURE STUDY

The objective of this trial was to compare a single dose of Compudose® to a single dose of Ralgro® on rate of gain in growing steers on pasture for approximately 200 days. The recommendation for Ralgro® is to reimplant after about 100 days, but for this trial it was decided to look at a single implant. On many ranches it is difficult to gather steers from the range and reimplant them.

Sixty-three fall-born steers, averaging 375 pounds, were stratified by breed, weight and age and randomly assigned to treatment. Calves were dropped in October and November, weaned during April and averaged 180 days of age at the start of the trial on May 14. Steers were run on crested wheatgrass range and moved to fresh pastures as feed availability became limiting. To maintain adequate gains, additional feed was provided on pasture as nutrient quality of the range declined with maturity of the plants. Barley was provided at the rate of 1 pound per day starting on July 18 and was increased to 2 pounds on August 7 to termination on November 26. A combination of native meadow hay and alfalfa also was provided on pasture starting August 7. As in the previously described trial, Compudose® implants were weighed individually before insertion and after removal to determine dosage rate. Delivery rate in this trial was 64 µg per head per day.

Gain data are presented in Table 2. Overall control steers gained 1.30 pounds per day, those implanted with Ralgro® 1.43 and Compudose® 1.50 pounds. This represents a 10 percent increase over controls with Ralgro® and 15 percent with Compudose®. Normally, Ralgro® is reimplanted every 90 to 100 days but in this trial the response to Ralgro® and Compudose® was identical through the first 168 days of the trial. The difference between the two implants occurred during the last 28 days of the trial. Ralgro® appeared to give an anabolic response throughout the 196-day trial period as did Compudose®. However, the last 28-day period may have signaled the end of Ralgro® response, whereas, Compudose® promoted a higher level of growth response.

Table 2. Average daily gain of control steers and steers receiving Ralgro® or Compudose® implants on pasture (196 days)

Treatment	No. ^{1/}	Initial weight	Gain	Average daily gain	Increase over control
		-----lb-----			%
Control	20	379	255	1.30	-
Ralgro®	18	380	281	1.43	10
Compudose	21	368	294	1.50	15

^{1/} During the first few days of the trial, four steers died of lead poisoning from prior ingestion of lead base paint from the dry lot fences.

SUMMARY

These studies show that Compudose® can improve weight gains over a long period of time (499 days in the first trial) and compares favorably to Ralgro®. Also, the implant appears to stay in the ear well (only one implant was lost in more than 90 steers implanted). Stimulatory activity

from a single implant over a long period and the ability to remove the implant are important considerations. In many cases, producers using other implants cannot or will not gather their steers for reimplantation and lose a portion of the potential benefit. With a long-lasting implant like Compudose®, this expensive and time-consuming task of gathering and handling steers for reimplantation is eliminated. Clearance of Compudose® appears to be close and possibly without withdrawal. Even if withdrawal becomes necessary before slaughter, the implant provides the capability of being physically removed. It looks like the initial clearance of Compudose® will be an implant designed to last 200 days. It is not known if clearance will be sought on longer lasting implants.

Table 2. Average daily gain of control steers and steers receiving implants of Compudose® (implants of duration 100 days)

Treatment	No. steers	Initial weight (pounds)	Final weight (pounds)	Average daily gain (pounds)	Duration over control steers
Control	20	315	325	0.05	100
Compudose®	18	315	325	0.05	100
Compudose®	21	315	325	0.05	100