Experimental Implant Evaluated in Grazing Yearling Steers[1]

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Summary

An experimental implant containing Beta-estradiol increased (P<.05) daily gain of grazing yearling steers by 15.5% compared to controls. Compudose implants increased (P<.01) daily gain by 13.5%. There was no gain difference between the experimental implant and Compudose.

Introduction

Commercial companies continue to develop new products, which must be tested for efficacy and safety prior to clearance. This trial was conducted to evaluate a new implant being developed by Hoffmann-LaRoche, Inc.

Experimental Procedures

One hundred and eighteen yearling steers averaging 642 lb were randomly allotted to three implant treatment groups as follows: (1) control (no implant); (2) Compudose; and (3) an experimental implant, identified as VJR, and containing Beta-estradiol as the active ingredient. All steers were individually weighed at the beginning and end of the 126-day trial. The implants were inserted subcutaneously in the middle of the backside of the ear at the onset of the trial. All cattle were handled similarly and grazed native pasture along the banks of the Arkansas River in Gray County. Implanted steers were checked for implant loss at the end of the trial. Data were analyzed by analysis of covariance with initial weight as a covariate. Duncan's multiple range test was used to determine statistical differences among treatments.

Results

Both implants improved (P<.01) average daily gain over that of controls. There was no significant difference between the Hoffmann-LaRoche experimental implant and Compudose. Implant loss in the Compudose-implanted steers was 2.3% (1 out of 43), vs. 5.0% (2 out of 40) in the experimental implant group.

[1]Appreciation is expressed to Wiley McFarland, Cimarron, KS, for supplying cattle and facilities and to Hoffmann-LaRoche, Inc. for support.

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Table 32.1. Implant Response in Grazing Yearling Steers

Item	Control	Compudose	Roche Implant VJR
No. of Steers	35	43	40
Begin. Wt., lb	644	639	643
Final Wt., lb	876	904	913
Daily Gain, lb	1.85[a]	2.10[b]	2.14[b]

[a,b]Values within the same row with different superscripts are significantly different (P<.01).

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Livestock Drugs and Human Safety

The U. S. Food and Drug Administration (FDA) is responsible for approving the license and sale of human and animal drugs and for monitoring their use once they are approved. Drugs used for cattle include implants, antibiotics, and ionophores like Rumensin® and Bovatec®. The regulations state that a new product must be proven both safe and effective. The process of obtaining that proof can take 7 to 10 years and cost millions of dollars.

The safety requirement states that the product must be safe for the animal receiving it, safe people handling it, and safe for people consuming the food. The food safety regulation is especially costly. The application for approval must include analytical procedures that are sensitive and specific enough to satisfy FDA that the product would be found even if present in extremely small amounts. In addition, the product must generally be given in large quantities to the target animal, then the carcasses destroyed after residue testing.

The efficacy requirement means that the drug must meet the claims on the label. For example, if growth promotion is claimed, then that must be demonstrated in carefully controlled experiments. Much of the efficacy testing is done at land-grant institutions such as Kansas State University.

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