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Effects of Decoquinatate on Gain and Health of Newly-arrived Stocker Cattle

Frank Brazle¹

Summary

Decoquinatate (Deccox®), when added to the diet of newly-arrived calves, reduced ($P<.05$) the number of treatments required per animal in three experiments involving 551 cattle. Feed conversion was improved in two of the three experiments and average daily gain was increased ($P<.05$) in one experiment when Deccox® was fed. Steer calves gained faster ($P<.001$) and required fewer ($P<.01$) treatments per head than bull calves castrated on arrival. Black, medium-framed calves required fewer ($P<.05$) treatments than other breed types.

Introduction

Feeder calves undergo numerous stresses when they are marketed, transported, and placed into a feedlot environment. Normally, as stressors increase, the incidence of clinical and subclinical coccidiosis increases. This weakens calves and allows for more problems from bovine respiratory disease (BRD).

We evaluated the gain and health benefits of feeding Deccox®², a highly effective coccidiostat, to calves during the first month after arrival.

Experimental Procedures

In January and February of 1985, 551 bull and steer calves of mixed breeds were purchased at auction markets (experiments 1 and 2) or off farms (experiment 3) in Southeast Kansas. They were shipped to a backgrounding lot, processed on arrival, and the bull calves were castrated with a knife. The calves were vaccinated for Infectious Bovine Rhinotracheitis (IBR), Bovine Virus Diarrhea (BVD), Parainfluenza₃ (PI₃), Leptospirosis pomona, Clostridium chauvoei and septicum, and Pasteurella, dewormed with Fenbendazole (Safe-Guard®) and given two sulfamethazine (Sulfa-span®) boluses per animal, then randomly allotted to either control or Deccox® treatments. Calves were breed typed into six groups: red, medium frame; black, medium frame; black white face, medium frame; exotic-cross, large frame; Brahman-cross, medium and large frame; and red white face, feather necked, medium frame.

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²Rhone-Poulenc, Inc., Atlanta, Georgia.

Experiments 1 and 2. The calves were fed a silage-based growing ration containing 71% dry matter and 46 Mcal/cwt NEg (dry basis), with AS-700® being fed the first 14 days of each experiment. Those on the Deccox® treatment were fed 24 to 25 mg of decoquinatate per 100 lb body weight daily. In experiment 2, a high percentage of the calves were affected with BRD.

Experiment 3. The calves were fed an alfalfa-based growing ration containing 86% dry matter and 46 Mcal/cwt NEg (dry basis), with AS 700® being fed the first 14 days. A high percentage of the calves were bought in the country without going through an auction. The calves on the Deccox® treatment were inadvertently underdosed and received only 11 mg per 100 lb body weight daily. In all three experiments, calves were treated if rectal temperature was above 104°F or there were visual signs of sickness. The data were evaluated by Analysis of Variance Procedures with Least Squares Means Procedures.

Results and Discussion

The calves fed Deccox® in experiment 1 showed an improvements in daily gain ($P<.05$), feed efficiency, and the number of treatments required per animal ($P<.05$). The Deccox®-treated calves in experiments 2 and 3 required fewer treatments per animal and in experiment 3, had better feed efficiency. There was no significant improvement in gain in experiments 2 and 3. Results are shown in Table 22.1.

Table 22.1. Effects of Deccox® on Performance and Health of Newly-arrived Stocker Calves.

Item	Least Squares Means ¹	
	Deccox®	Control
<u>Experiment 1--28 Days:</u>		
No. Calves	77	78
Daily Gain, lb	1.66 ^b ± .22 ²	.99 ^a ± .23
No. Treatments/Animal	.49 ^a ± .53	1.76 ^b ± .54
Feed DM/Gain, lb	8.39	11.35
No. Deaths	2	2
<u>Experiment 2--31 Days:</u>		
No. Calves	113	112
Daily Gain, lb	1.36 ± .24	1.38 ± .24
No. Treatment/Animal	4.06 ^a ± .50	5.31 ^b ± .50
Feed DM/Gain, lb	10.08	10.18
No. Deaths	16	18
<u>Experiment 3--28 Days:</u>		
No. Calves	85	86
Daily Gain, lb	2.16 ± .29	2.08 ± .24
No. Treatments/Animal	.77 ^a ± .64	2.27 ^b ± .55
Feed DM/Gain, lb	6.68	7.10
No. Deaths	2	3

¹The least squares model accounted for trial, treatment, sex, breed, trial x sex, trial x treatment, treatment x sex, and starting weight.

²Standard error.

^{ab}Means in the same row with different superscripts are significantly different ($P<.05$).

A large percentage of the calves in experiment 2 were sick from BRD. In experiment 3, the calves were underdosed with Deccox®, but were country fresh and exposed to less stress, which may explain their lack of gain response.

The largest responses in the three experiments from Deccox® were obtained in bulls castrated on arrival. They out-gained ($P < .10$) the control bulls by .38 lb per head daily, and required 3.2 fewer ($P < .001$) treatments per animal (Table 22.2).

Table 22.2. Effects of Deccox® on Gain and Health of Bull and Steer Calves

Item	Least Squares Means ¹	
	Deccox® Bulls ²	Control Bulls
Daily Gain, lb	1.36 ^b \pm .32 ³	.98 ^a \pm .27
No. Treatments/Animal	1.63 ^c \pm .70	4.87 ^d \pm .58
Item	Least Squares Means ¹	
	Deccox® Steers	Control Steers
Daily Gain, lb	2.09 \pm .10	1.99 \pm .11
No. Treatments/Animal	1.91 \pm .24	1.76 \pm .25

¹The least squares model accounted for trial, treatment, sex, breed, trial x sex, trial x treatment, treatment x sex, and starting weight.

²Purchased as bulls and castrated on arrival.

³Standard error.

^{a,b}Means in same row with different superscripts are significantly different ($P < .10$).

^{c,d}Means in the same row with different superscripts are significantly different ($P < .001$).

These data strongly suggest that Deccox® helps reduce health problems of newly-arrived calves by reducing the stress of sub-clinical coccidiosis, resulting in better gains and feed conversion. No clinical cases of coccidiosis developed in the calves. Each time an animal was treated, it was correlated with a daily gain reduction of .14 lb. Steers out-gained ($P < .001$) bulls castrated on arrival by .87 lb per day and required 1.2 fewer ($P < .01$) treatments per animal (Table 22.3).

The black, medium-framed calves required fewer ($P < .05$) treatments than other breed types; they may have more natural immunity than some other breed types (Table 22.4). These data agree with earlier findings by the author (Cattlemen's Day, 1985). The Brahman cross calves gained slower ($P < .05$) than the red white face calves.

Table 22.3. Effects of Sex Status on Gain and Health of Newly-arrived Stocker Calves

Item	Least Squares Means ¹	
	Bulls ²	Steers
Starting Weight, lb	493.7 + 7.8 ³	494.8 + 3.0
Daily Gain, lb	1.17 ^a + .21	2.04 ^b + .08
No. Treatments/Animal	3.047 ^d + .46	1.84 ^c + .18

¹The least squares model accounted for trial, treatment, sex, breed, trial x sex, trial x treatment, treatment x sex, and starting weight.

²Purchased as bulls and castrated on arrival.

³Standard error.

^{a,b}Means in the same row with different superscripts are significantly different (P<.001).

^{c,d}Means in same row with different superscripts are significantly different (P<.01).

Table 22.4. Effects of Breed-type on Gain and Health of Newly-arrived Stocker Calves.

Item	Least Squares Means ¹					
	Red Medium-Frame	Black Medium-Frame	Black White Face	Brahman Cross	Exotic Cross	Red White Face
Starting Wt., lb	489.4	476.8	501.2	509.2	505.4	483.5
Daily Gain, lb	1.58 ^{ab} + .22 ^a	1.56 ^{ab} + .19	1.59 ^{ab} + .16	1.44 ^a + .21	1.51 ^a + .23	1.93 ^b + .18
No. Treatments/ Animal	2.28 ^b + .50	1.45 ^a + .43	2.35 ^b + .35	3.06 ^b + .48	2.77 ^b + .53	2.75 ^b + .40

¹The least squares model accounted for trial, treatment, sex, breed, trial x sex, trial x treatment, treatment x sex, and starting weight.

²Standard error.

^{a,b}Means in the same row not sharing the same superscript are significantly different (P<.05).