EFFECTS OF TILMICOSIN OR CEFTIOFUR ON HEALTH AND PERFORMANCE OF SHIPPING STRESSED STOCKER CATTLE

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Story in Brief

One hundred twenty one head of cattle demonstrating clinical signs of bovine respiratory disease were selected from 213 head of shipping stressed heifer, steer and bull calves, weighing an average of 500 lbs. These cattle were used to determine the relative efficacy of Tilmicosin and Ceftiofur for the treatment of bovine respiratory disease. Tilmicosin produced a greater response (rectal temperature < 104.0° F and disappearance of clinical signs) to treatment (72.6 vs 55.9%); and with this treatment severity of illness scores (1.7 vs 2.2) were also lower. Rectal temperatures of calves treated with Tilmicosin were lower on day 4 than those treated with Ceftiofur (103.3 vs 104.0° F). Fewer cattle receiving Tilmicosin required treatment with a second drug following their initial treatment (24.1 vs 42.4%). Cattle treated with Tilmicosin had greater daily gains during the 28 day receiving period (0.63 vs -0.03 lbs).

(Key Words: Shipping Fever, Tilmicosin, Ceftiofur, Stressed Calves.)

Introduction

Transported stocker cattle, being under stress, are extremely susceptible to shipping fever, also known as the bovine respiratory disease complex (BRD). Drugs which decrease the incidence or severity of BRD of newly received stocker cattle are of great interest because mortality rates typically range from 2 to 5%. Tilmicosin is an experimental new drug that may improve cattle health and performance.

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Materials and Methods

Upon arrival at Pawhuska, OK, from either Kentucky or Georgia, 213 cattle were weighed individually, identified with an ear tag and allotted randomly to 10 pens for a nutrition study. On arrival cattle had free choice access to water and long stem grass hay. The following morning, all calves were processed as follows: vaccinated with IBR/PI3 (modified live virus; i.m.) and 7 way clostridial bacterin and injected with ivermectin. Calves were adapted to a 72% concentrate ration which was limit fed to allow gains up to 2 lb/day. Any calves showing signs of illness upon arrival were placed on a medication program and were not included in the comparative respiratory treatment study.

Starting on day 1, cattle showing visual signs of respiratory disease that had a rectal temperature of 104° F or higher were treated with Tilmicosin (Elanco Products, Division of Eli Lilly, Indianapolis, IN) (10 mg/kg) or Ceftiofur sodium (Upjohn Co., Kalamazoo, MI) (0.50 mg/lb). Alternate cattle received each treatment. Tilmicosin was administered as a single s.c. injection; Ceftiofur was administered once daily for 3 days. All cattle were assigned a severity of illness score (1 = normal; 2 = slight depression; 3 = moderate depression; 4 = severe depression, not moving; 5 = downer, dead) at the time of treatment. On day 4, body temperature was taken and severity of illness was scored. Cattle then were classified as responders (not requiring further treatment) or retreats which required additional treatment beyond the initial three days. Cattle initially treated with Tilmicosin and classified as a retreat were treated with another antibiotic and did not receive a second injection of Tilmicosin. Cattle initially treated with Ceftiofur and classified as a retreat received Ceftiofur for two more days or with another antibiotic if no improvement was noted on day 4. At the end of 28 days, bulls were castrated, horns were tipped, and cattle were weighed, branded, implanted and moved to pasture.

All data were analyzed using the general linear model of SAS with the main effects of drug and a combined effect of nutritional treatment and origin. F tests were used to identify significant effects of drug treatments.

Results and Discussion

Health response to Tilmicosin or Ceftiofur are shown in Table 1. Cattle receiving Tilmicosin showed a greater response ($P<.03$) to their first treatment (72.6 vs 55.9%); on day 4, their severity of illness was lower (1.7 vs 2.2) and rectal temperature was lower (103.3 vs 104.0). The incidence of retreats also was decreased ($P<.02$) and mortality was lower ($P<.05$) with Tilmicosin.

Table 1. Effect of Tilmicosin or Ceftiofur on animal health.

	Tilmicosin	Ceftiofur	Probability (P<)
Animals, Number	62	59	
Response, %	72.6	55.9	.03
Severity			
Day 1, score[a]	2.8	2.8	
Day 4	1.7	2.2	.01
Temperature			
Day 1, °F	105.2	105.4	
Day 4, °F	103.3	104.0	.01
Weight[b]			
Day 1, lb	506	508	
Day 4, lb	519	509	
Retreat, %	24.1	42.4	.02
Repull, %[c]	4.8	10.2	
Mortality, %	1.6	10.2	.05
Treatment days, number[d]	1.8	5.5	.01

[a] 1 = normal; 2 = slight depression; 3 = moderate depression; 4 = severe depression, not moving; 5 = downer, dead.

[b] Least squares means.

[c] Animals found sick more than once.

[d] Because Tilmicosin is a single injection treatment and Ceftiofur was administered a minimum of 3 days, a statistical bias exists.

Cattle performance is presented in Table 2. Cattle treated with Tilmicosin had greater (P<.07) final body weight and greater (P<.04) average daily gain during the 28 day study. This greater average daily gain may be a result of greater response by cattle to the initial treatment with Tilmicosin.

A higher percentage of calves treated with Ceftiofur needed retreatment with a second drug and were treated for more (P<.01) days (5.5 vs 1.8), which probably impaired performance.

A new antibiotic, Tilmicosin is being studied for the treatment of BRD. Administered as a single s.c. injection, it maintains a three day therapeutic level of antibiotic in the lung. In this study, Tilmicosin proved useful as an antibiotic for treatment of BRD.

Table 2. Effect of Tilmicosin or Ceftiofur on performance[a].

	Tilmicosin	Ceftiofur	Probability (P<)
Animals, number	62	59	
Weight			
Arrival	502	498	
Final	521	498	.07
Average daily gain, lb	0.63	-0.03	.04

[a]Least squares means.