

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

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Story in Brief

In studies at Pawhuska the treatment of shipping-stressed calves exhibiting symptoms of the bovine respiratory complex with either tilmicosin (Micotil®) or ceftiofur (Naxcel®) were effective. The response rate for calves treated with 1.5ml/cwt of tilmicosin was 87% and the response rate for cattle treated with 2ml/cwt of ceftiofur was 79%. The repull rate tended to be lower for tilmicosin, 12% vs 18%. Daily gain for 28 days following first treatment was higher (0.64 vs 0.28 pounds per day) for animals which received tilmicosin. Ceftiofur was administered daily for 3 days, while tilmicosin was administered only on the first day following the first detection of symptoms of Bovine Respiratory Disease.

(Keywords: Bovine Respiratory Disease, Tilmicosin, Ceftiofur.)

Introduction

Transported stocker cattle are usually highly stressed and very susceptible to shipping fever, also known as the Bovine Respiratory Disease Complex (BRD). Approved antimicrobial drugs which decrease losses due to BRD are of great interest because morbidity rates often exceed 50% and mortality rates typically range from 2 to 5%. Tilmicosin and ceftiofur were compared as treatments for BRD to determine their relative impact on response rates and performance.

Materials and Methods

Upon arrival at Pawhuska, Oklahoma, from either Florida or Alabama, steer and bull cattle were weighed individually, identified with an ear tag and allotted to six pens. On arrival, cattle had free access to water and long stem grass hay.

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The following morning, all calves were processed as follows: vaccinated with IBR/BRSV/PI3 (MLV, IM) (Bovishield IBR-PI3-BRSV[®], SmithKline Beecham Animal Health, Exton, PA), 4-way clostridial bacterin (Ultrabac CSNS[®], SmithKline Beecham Animal Health, Exton, PA.) (SQ) and injected with ivermectin (SQ) (Ivomec[®] 1% Injection for Cattle, Merck AgVet, Rahway, NJ). Calves from Florida were treated with ivermectin/clorsulon combination (Ivomec-F Injection, Merck AVet, Rahway, NJ). On about day 10, calves were vaccinated with IBR/BRSV/Lepto pomona (IM) (Bovishield IBR/BRSV/LP[®], SmithKline Beecham Animal Health, Exton, PA.). Calves had ad libitum access to native grass hay and were fed two pounds per head daily of a 38% natural protein pellet during their stay at the research station.

Calves showing visual signs of bovine respiratory disease that had a rectal temperature of 104° or higher were treated with tilmicosin (Micotil[®], Elanco Animal Health) at 10mg/kg of body weight (1.5ml/cwt) or ceftiofur (Naxcel[®], Upjohn Co.) at 2mg/kg of body weight (2ml/cwt). Cattle were assigned to treatment using a computer generated randomization chart. Tilmicosin was administered as a single subcutaneous injection while ceftiofur was administered in the muscle once daily for three consecutive days. All sick calves were assigned a severity of illness score (1=normal; 2=slightly ill; 3=moderately ill; 4=severely ill; 5=down or dead) when initially removed from the pen for treatment and daily for nine consecutive days. The calves were also scored on the 28th day following initial treatment. Calves were weighed on days 1, 4 and 28. All scoring of calves was done by the investigators, who were blinded to the assigned treatments.

On the 4th day following the initial determination that the calf was sick the body temperature of these sick calves was taken and recorded, a severity of illness score was assigned, and the calves were weighed. Calves were determined to be responders or non-responders (re-treats) based only upon change of severity of illness scores (visual observation). Cattle from either treatment group which had not satisfactorily responded to initial therapy were treated with long acting oxytetracycline (LA200[®], Pfizer Inc., New York, NY) and sustained release sulfadimethoxine boluses (Albon-SR[®], Hoffman-LaRoche Inc., Nutley, NJ). Calves requiring treatment after return to the home pens were classified as repulls. Repulls previously treated with only tilmicosin or ceftiofur were treated with long-acting oxytetracycline and sustained release sulfadimethoxine boluses. Calves already treated with long acting tetracycline and sustained release sulfadimethoxine boluses were classified as non-responders and were treated with the opposite drug used for initial therapy.

All cattle were held for observation for 28 days following the initial

onset of illness. Following completion of the study the bulls were castrated, horns were tipped, calves were weighed, scored, vaccinated with IBR/BVD/PI3 (MLV, IM), (Bovishield 3[®], SmithKline Beecham Animal Health, Exton, PA) and shipped to wheat pasture.

All data were analyzed using the general linear model of SAS. F tests were used to identify significant effects of drug treatments.

Results and Discussion

The response rate (Table 1) of calves treated for BRD with tilmicosin was 87% while the response rate of calves treated with ceftiofur was 79%. The retreat rate for calves treated with tilmicosin was lower (1.2 vs 3.5%) but was not statistically different ($P < .27$). The repull rate was lower for calves treated with tilmicosin than those treated with ceftiofur (11.5% VS 17.7%), however these differences were not statistically significant ($P < .22$). More calves treated with ceftiofur were repulled multiple times than those treated with tilmicosin (6.3 vs 3.2%), although statistical difference did not exist ($P < .31$). One calf in each group died and were necropsied by the investigator. Cause of death was determined to be BRD. The differences in average daily gains measured at days 4 and 28 were significantly higher ($P < .01$) for those calves treated with tilmicosin.

In an earlier report, calves treated with tilmicosin had significantly improved average daily gains, improved response rates, improved severity of illness scores on day 4, and lower retreat rates than those treated with ceftiofur.

The use of tilmicosin or ceftiofur provided satisfactory health responses in this trial. Other factors that need to be considered when selecting a drug for the treatment of BRD are product costs, labor costs and number of treatments required.

Literature Cited

- Smith, R. A. et al. 1991. Effects of tilmicosin or ceftiofur on health and performance of shipping stressed stocker cattle. OSU Animal Science Res. Rep. MP-134:152-155.

Table 1. Effect of tilmicosin or ceftiofur on animal health and performance.

	Tilmicosin	Ceftiofur	Probability (P<)
No. of animals	94	95	
Weight, day 1	412	412	
Response, %	87.27	78.79	
Severity score ^{a,b}			
Day 1	2.07	2.06	0.88
Day 4	1.01	1.01	0.85
Day 28	1.07	1.04	0.67
Temperature ^b			
Day 1	105.4	105.5	0.51
Day 4	103.3	103.1	0.24
ADG (lb) ^b			
Day 1-4	2.95	1.70	0.01
Day 1-28	0.64	0.28	0.01
Retreat, % ^{b,c}	1.19	3.48	0.28
Repull, % ^{b,d}	11.54	17.73	0.23
Multiple repulls, % ^b	3.15	6.29	0.31
Mortality, no	1	1	

a 1=Normal; 2=slightly ill; 3=moderately ill; 4=severely ill; 5=down or dead.

b Least squares mean.

c A retreat was defined as a calf that required a second treatment regimen without a break in treatment days.

d A repull is defined as a calf that had a break in treatment days between initial and subsequent treatments.

Notice to Producers

Tilmicosin (Micotil[®]) and ceftiofur (Naxcel[®]) are prescription products and require a veterinarian-client-patient relationship before use. Read all labels and follow label instructions.