Feed-Based Metaphylaxis Programs Did Not Affect Health or Performance of High-Risk Calves Mass Medicated with Draxxin on Arrival

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Introduction

Bovine respiratory disease continues to be the most costly disease affecting productivity and profitability in the stocker segment. Despite their high cost, longer-acting, injectable therapeutic antimicrobials such as Draxxin (Tulathromycin; Pfizer Animal Health, New York, NY) can extend the window of treatment duration, thereby reducing the incidence and severity of bovine respiratory disease. Use of feed-based metaphylaxis programs, such as therapeutic administration of multiple 5-day pulses of Aureomycin (Alpharma, Inc., Bridgewater, NJ), in conjunction with an injectable metaphylaxis program may be a cost-effective way to improve bovine respiratory disease therapy without having to physically handle and stress cattle.

Experimental Procedures

One 55-day receiving study was conducted at the Kansas State University Beef Stocker Unit during May 2008 to determine the response of high-risk stocker calves to concurrent metaphylaxis with Draxxin and Aureomycin. All cattle were sourced from an order buyer in Tennessee, and cattle were received over 3 consecutive days. Upon arrival, all calves were weighed, tagged, mass medicated with Draxxin (1.1 mL/100 lb), and palpated for gender (bull or steer). Calves were then given free-choice access to long-stem prairie hay and water. The following day, calves were vaccinated against clostridial and respiratory diseases and dewormed, and bulls were surgically castrated. Each load (three total) was then blocked by arrival date and randomly assigned to one of three treatments for a total of 24 pens. Castrated bulls were distributed equally among the eight pens within each alley. Cattle were weighed and revaccinated 12 days after initial processing and weighed again following the 55-day feeding period. Calves were stepped up using three sequential growing diets ranging from 29% to 36.5% concentrate. Diets were fed with addition of one of the following three treatments: (1) no top-dress pellets (control); (2) top-dressed with Aureomycin-containing pellets (10 mg chlortetracycline per pound of body weight) on days 8 to 12, 14 to 18, 20 to 24, and 26 to 30 post-arrival; or (3) top-dressed with Aureomycin pellets on days 0 to 4, 6 to 10, 12 to 16, 18 to 22, and 24 to 28 followed by 25 days of administration of AS-700 (Alpharma, Inc.), which provided 350 mg/head per day of both chlortetracycline and sulfamethazine. All treatments received Bovatec (Alpharma, Inc.) at 250 to 300 mg/head daily in the complete feed for the first 28 days on study. The control and Aureomycin-only treatments received Bovatec from day 29 until conclusion of the study.

Cattle were observed daily for signs of illness and injury by personnel blinded to treatments. Calves were treated for respiratory disease with Draxxin only after a moratorium of 5 days post-metaphylaxis. Calves determined to need treatment were given Baytril (Bayer Animal Health, Shawnee Mission, KS) at 5 mL/100 lb body weight as a first treatment; Nuflor (Intervet/Schering-Plough Animal Health, Millsboro, DE) at

6 mL/100 lb body weight as a second treatment, if needed; and Bio-Mycin 200 (Boehringer Ingelheim, Ridgefield, CT) at 4.5 mL/100 lb body weight as a third treatment, if needed.

Bunks were checked twice daily, and feed was delivered in amounts sufficient to result in slick bunks both morning and afternoon. Calves were fed their respective diets at approximately 7:00 a.m. and 3:00 p.m. daily for 55 days.

Daily dry matter intake, gains, and feed efficiencies were determined for each pen of calves. Health records were used to determine the number of animals treated and percentage of death loss.

Performance and health data were analyzed by using the random effects MIXED model procedure SAS (SAS Institute, Inc., Cary, NC). Treatments were arranged in a randomized incomplete block design; pen served as the experimental unit for growth and health characteristic analysis. In the model, fixed effects were treatment, lot, and gender, and random effects were lot × treatment, pen, and animal ID. Percentages of morbidity and mortality were evaluated by the Chi-Square test, and differences were declared significant at $P<0.05$.

Results and Discussion

There were no significant differences among treatments in the percentage of steers treated once, twice, or one or more times for bovine respiratory disease ($P>0.30$; Table 1). There were no significant differences in daily gain ($P=0.66$), daily dry matter intake ($P=0.68$), or feed efficiency ($P=0.50$) among the three treatments.

Implications

This experiment showed no benefit of feeding Aureomycin for four 5-day periods after receiving when calves were mass medicated with Draxxin upon arrival. These results may be beneficial to producers who are evaluating treatment protocols for newly received high-risk stocker calves.

Table 1. Treatment incidence for bovine respiratory disease (BRD), percentage of death loss, and growth performance of newly arrived stocker calves receiving injectable and feed-based metaphylaxis programs during a 55-day receiving study

	Treatment[1]				
Item	Draxxin	Draxxin plus Aureomycin	Draxxin plus Aureomycin plus AS-700	SEM	P-value
No. of pens	8	8	8		
No. of steers	32	32	31		
No. of castrated bulls	72	73	73		
Initial weight, lb	453	449	452	4.0	0.79
Weight at revaccination, lb	507	507	505	5.0	0.97
Final weight, lb	616	613	622	6.0	0.58
Treatments for BRD, % of calves					
Treated only once	15.2	22.6	18.8	3.3	0.30
Treated two times or more	24.6	21.2	16.6	4.7	0.49
Total BRD treatment, one or more times	39.8	43.8	35.4	4.8	0.48
Death loss, %	0	0.84	2.18	1.2	0.39
Daily dry matter intake, lb	14.54	14.31	14.68	0.31	0.68
Average daily gain, lb	3.02	3.04	3.15	0.10	0.66
Feed:Gain	4.92	4.81	4.78	0.08	0.50

[1] Draxxin, calves administered Draxxin upon arrival; Draxxin plus Aureomycin, calves administered Draxxin upon arrival in addition to pulse dosing of Aureomycin on days 8 to 12, 14 to 18, 20 to 24, and 26 to 30 post-arrival; Draxxin plus Aureomycin plus AS-700, calves administered Draxxin upon arrival in addition to pulse dosing of Aureomycin on days 0 to 4, 6 to 10, 12 to 16, 18 to 22, and 24 to 28 followed by 25 days of AS-700.