

THE RESPONSE OF NEWLY ARRIVED STOCKER CATTLE TO DIFFERENT MEDICAL REGIMENS

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Story in Brief

Different medical regimens for treating newly received steer and bull calves were evaluated in three experiments with 524 sick cattle. In experiment one, 173 head of 523 received cattle became sick and were treated as follows: 28 head received oxytetracycline plus sulfamethazine boluses, 35 head received amoxicillin, 67 head received potentiated sulfa boluses, and 43 head served as negative controls (not treated for sickness). The percent responses to the three drug treatments were 82.1%, 45.7%, and 91.0% for oxytetracycline plus sulfamethazine boluses, amoxicillin, and potentiated sulfa boluses, respectively. In experiment two, 219 head of 463 received cattle became sick and were treated as follows: 75 head received oxytetracycline plus sulfamethazine boluses, 83 head received potentiated sulfa boluses, and 61 head served as negative controls. The percent response to the two drugs were 56.0% and 51.1% for oxytetracycline plus sulfamethazine boluses and potentiated sulfa boluses, respectively. The negative controls were sick for more days than either of the treated groups and death loss was much higher (32.8 vs 3.2% of the sick cattle). In experiment three, 237 of 502 cattle were treated with either oxytetracycline plus sulfamethazine boluses (107 head) or potentiated sulfa boluses (130 head). The responses to oxytetracycline plus sulfamethazine boluses and potentiated sulfa boluses were 59.3% and 57.5%, respectively. The percent death losses in the three experiments were .76%, 5.4%, and 1.8%, respectively.

(Key Words: Bovine Respiratory Disease, Newly Received Cattle, Oxytetracycline, Primor, Sulfamethazine)

Introduction

Between two and five percent of newly arrived stocker cattle received in Oklahoma die of stress related diseases, primarily the Bovine Respiratory Disease (BRD) complex, shortly after shipping. Morbidity ranges from 0 to 100 percent with an average between 25 and 30 percent. In order to prevent excessive death loss and decreased performance, sick cattle must respond to drug therapy. Studies have shown that cattle exhibiting signs of BRD respond well to oxytetracycline (OTC) or sulfamethazine treatment (Breeze et al., 1980; Nash, 1983). The potentiated sulfa boluses (PSB) used in this study was an experimental potentiated combination drug employing sulfadimethoxine and ormetoprim in a ratio of 5:1. The objective of this research was to study the response of sick cattle that were treated with either OTC plus sulfamethazine boluses (SB) or PSB.

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Materials and Methods

This research was superimposed across three other studies being conducted at the Pawhuska, Oklahoma Research Station with newly received stocker cattle over 28 day receiving periods. The cattle and experimental procedures used in all three of these experiments are described elsewhere in this publication (Hicks et al., 1986a, 1986b, 1986c).

In all three experiments, medical treatment for sick animals was determined by the ear tag number which was applied at random on arrival. Treatment schedules assigned to sick cattle in Exp. 1 were: A) no treatment (negative controls), B) a sequence of antimicrobial drugs (Table 1), or C) PSB^a. Cattle treated by schedule B were initially treated with the first drug in the sequence. If body temperature dropped 2°F or to less than 104°F, or clinical signs were improved within 24 hours, the first drug was continued for two more days. If no improvement was apparent within 24 hours, the next drug in the sequence was used and the process was repeated until improvement was detected. In 35 head, drug treatments 1 and 3 were reversed so that the first treatment was amoxicillin. Cattle treated by schedule C received PSB orally at 30 mg/lb on day one and 15 mg/lb on days 2-5, regardless of response to therapy.

Treatment schedules assigned to sick cattle in Exp. 2 were: A) no treatment, B) sequence of antimicrobial drugs (same as in Table 1 except that spectinomycin was substituted for treatment 3), or C) PSB substituted for treatment 1 in sequence. These same treatment schedules were used in Exp. 3 except that no negative control cattle were included. Response to treatment in these two experiments was determined in the same manner as described for Exp. 1.

Table 1. Sequence of drugs used for treatment of BRD.

Treatment No 1:	<u>OXYTETRACYCLINE</u> (Biomylin-C®) subcutaneously - 5 mg/lb. PLUS <u>SULFAMETHAZINE BOLUSES</u> (15 gm) 1 bolus/150 lb on day 1. One bolus/300 lb on subsequent days.
Treatment No 2: ^a	<u>ERYTHROMYCIN</u> (Gallamycin®) deep in the muscles - 10 mg/lb.
Treatment No 3: ^a	<u>AMOXICILLIN</u> (Amoxi-ject®) subcutaneously 5 mg/lb.
Treatment No 4: ^a	<u>Procaine Penicillin G</u> subcutaneously - 30,000 IU/lb.
Treatment No 5: ^a	<u>TYLAN 200</u> - 10 mg/lb.
Treatment No 6: ^a	<u>SPECTINOMYCIN</u> (Spectam®) - 5 mg/lb.

^aSome of the antimicrobial drugs used in this study were used for extra-label purpose or at extra-label dosages and require a veterinarian-client-patient relationship before use.

^aPrimor®, Hoffman-LaRoche, Inc., Nutley, NJ 07110.

Results and Discussion

In Exp. 1, cattle treated with PSB or OTC plus SB responded significantly ($P < .05$) better than cattle treated with amoxicillin (Table 2). Only 45.7% of the cattle treated with amoxicillin responded (recovered from sickness), whereas, response rates of 91% and 82.1% were observed in cattle treated with PSB and OTC plus SB, respectively. Cattle treated for sickness gained 30 to 58% faster than negative control cattle (.86 lb/day) with cattle receiving OTC plus SB having the highest weight gains (1.36 lb/day) over the 28 day periods. Cattle treated with PSB had gains similar (1.30 lb/day) to those treated with OTC plus SB. Negative control cattle had a greater number of sick days (8.4 days/head) than treated cattle with the OTC plus SB group having the fewest sick days (5.2 days/head). Number of repulls (cattle that had to be treated more than once for respiratory disease) were highest in the PSB cattle (20.9%). Death loss in the negative control cattle was 4.7% of those getting sick, versus 3.0%, 0%, and 0% of those becoming sick in the PSB, OTC plus SB and amoxicillin groups, respectively.

In contrast to the above results, cattle in Exp. 2 and 3 tended to respond slightly better when treated with OTC plus SB versus PSB. In Exp. 2, 56.0% of the cattle treated for BRD responded to OTC plus SB and 51.1% responded to PSB. The responses in Exp. 3 were similar (59.3% for OTC + SB vs 57.5% for PSB). In these two experiments, daily gains tended to be greater for cattle treated with PSB. The PSB treated head gained 0.04 and 0.20 lb/head more than the OTC plus SB cattle in

Table 2. Effect of different medical regimens on daily gains, sick days, repulls and response to first treatment in sick cattle.

	Head No.	Daily Gains [*] lb	Sick Days [*]	Repulls [*] %	Response [*] %	Mortality ^a %
Experiment 1						
OTC + SB	43	1.36	5.2	7.1	82.1 ^e	0.0
Amoxi	35	1.12	6.9	14.3	45.7 ^d	0.0
PSB	37	1.30	6.5 ^b	20.9 ^c	91.0 ^e	3.0
Controls	43	.86	8.4	7.0 ^c	----	4.7
Experiment 2						
OTC + SB	75	.84	7.4 ^f	24.3	56.0	2.6
PSB	83	.88	8.3 ^f	18.5	51.1	3.8
Controls	61	.84	12.2 ^g	10.1 ^c	----	32.8
Experiment 3						
OTC + SB	107	.59	6.4	19.4	59.3	3.7
PSB	129	.79	7.1	12.8	57.5	3.8

* Expressed as least square means.

^a Percent of sick cattle.

^b Protocol required at least a 5 day treatment period.

^c Many of these cattle never recovered and remained in the sick pen the entire trial

^{d, e} Means with different superscripts differ ($P < .01$)

^{f, g} Means with different superscripts differ ($P < .05$)

experiments two and three, respectively. However, these same cattle tended to require more treatment days to recover from sickness (Exp. 2- 8.3 vs 7.4 days/head and Exp. 3- 7.1 vs 6.4 days/head). Compared to Exp. 1, the PSB treated cattle had fewer repulls than the OTC plus SB cattle in both Exp. 2 and 3. The death loss in these two experiments was similar for the OTC plus SB and PSB groups. In Exp. 2, the negative control cattle had a greater ($P < .05$) number of sick days than either of the treated groups (12.2 vs 7.9 days/head) and the mortality rate was much greater (32.8% vs 3.2%). In this experiment there was a definite economic advantage with the treatment of sick cattle. The response to treatment in these experiments was much lower than that observed in Exp. 1 probably due to the fact that these cattle were less productive, sicker cattle than those in Exp. 1 as evidenced by lower gains and higher morbidity. Studies done at Pawhuska tend to indicate that morbid, poorer performing cattle are less likely to respond to medical treatment.

Under the conditions of these experiments there were no real differences in the response and performance of sick cattle treated with OTC plus SB or PSB. Either medical regimen is useful in the treatment of newly arrived, stressed cattle showing symptoms of BRD.

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