SYNTABAC® FOR STRESSED STOCKER CATTLE

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Story in Brief

The effects of Syntabac® on health and performance of stressed stocker cattle were measured in four trials using 323 newly received steer and bull calves. Similar gain (2.13 vs 2.10 lb/day), feed intake and gain to feed were observed with the use of a drench of probiotic Syntabac® in the newly received cattle. The number of medical treatments required per head was decreased by 5% (2.6 vs 2.8), although morbidity was increased slightly (40.4% vs 37.0%) in the treatment group. Mortality was similiar (1.2% vs 0.0%) in both groups. Because probiotic treatment could not have had an effect on the cattle that were sick at processing, the data were analyzed with those animals detected as sick during the first three days excluded. Gains were improved (1.91 vs 1.86 lb/day) and mean medical treatments required were decreased (2.5 vs 2.6) in this analysis. Furthermore, of the sick cattle that were removed after day 3, the Syntabac® cattle had 45% higher average gains (1.8 vs 1.2 lb/day), required fewer medical treatments (3.8 vs 3.9) and fewer were again observed as sick (4.7% vs 10.7%). Although, overall performance was similar in both cattle groups, the probiotic Syntabac® decreased the number of medical treatments required per head and reduced the incidence of sickness beyond day 3 after arrival.

(Key Words: Syntabac®, Probiotic, Stressed Stocker Cattle.)

Introduction

William and Mahoney (1984) stated that stresses such as fasting, transportation, assembly, vaccination, castration and dehorning may alter the gut microflora reducing the numbers of beneficial gut bacteria. These losses may decrease performance and increase morbidity and death loss. Administration of a microbial culture probiotic to repopulate the gut may help reduce these changes in the population of gut microflora. Probiotics administered at processing and fed in the receiving diet for 28 days sometimes will increase daily gain and feed efficiency as well as reduce

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morbidity among the stressed cattle (Hutcheson et al., 1980; Davis, 1982; Hicks et al., 1986; Gill et al., 1987). This study was conducted to determine the effect of Syntabac®, a microbial culture drench (8×10^9 CFU Streptococcus faecium M74), on the health and performance of newly received stocker cattle.

Materials and Methods

Three hundred twenty-three head of cattle were assembled by order buyers and shipped to Pawhuska, Oklahoma in the spring of 1988. The origin, arrival dates and weight, number of head and transit shrink for each trial are summarized in Table 1. Upon arrival, cattle were weighed individually, ear tagged and placed at random in one of eight pens which had been assigned to one to the following treatments: control or 10 ml drench treatment of Syntabac®. The drench treatments were applied at the time of processing on the morning following arrival. Individual cattle in each pen were processed as follows:

1. Body temperature and time were recorded.
2. Cattle were vaccinated with IBR-PI3 (MLV) intermuscularly Leptospira pomona bacterin, Clostridia chavoei, septicom, novyi and sordellii bacterin and dewormed with Ivomec[a].
3. Cattle assigned to the treatment group received a drenching of Syntabac®.
4. Cattle with clinical signs of illness and a body temperature of 104°F or greater received antibiotic treatment and sick animals were placed in the hospital pen and healthy animals were returned to their home pen.

Table 1. Origin, arrival date, number of head, arrival weight and intransit shrink for truck loads of cattle.

	Origin	Arrival date	Number of head	Arrival wt., lb	Shrink, %
Trial 1	OK	1-22-1988	100	529	7.2
Trial 2	AR	2-06-1988	87	514	7.7
Trial 3	AL	2-28-1988	85	514	4.8
Trial 4	AL	3-13-1988	51	488	7.3

[a]Ivomec, MSD Agvet, Rahway, NJ.

Cattle were checked twice daily for signs of illness. Sick animals were moved to the processing area where body temperature was measured and severity of illness was clinically appraised. If body temperature exceeded 104°F or the animal exhibited clinical signs of illness, the animal was considered sick. Sick animals received a medical treatment based on a specified sequence of antimicrobial drugs. This medical treatment was continued for three days and then was evaluated. If the medical treatment had alleviated clinical symptoms and restored normal rectal temperature, treatment was discontinued. If clinical symptoms and rectal temperature improved but the animal was not determined as well, the treatment was continued for two additional days. If the animal exhibited no improvement to the initial medical treatment, the next drug in the sequence was administered. This process was repeated until a health improvement was detected.

Cattle received free access to prairie hay and were fed 2 lb/day a pelleted feed supplement (Table 2) for the first 21 days. The amount of supplement was decreased to 1 lb/day during days 22 to 28 of the receiving trial.

Least squares analysis of variance was performaned on data for all response criteria. Responses to the Syntabac® treatments were analyzed using animal as the experimental unit except for the feed efficiency and feed intake responses which were analyzed using pen as the experimental unit. The initial models for weight gains, (Table 3) medical treatment, morbidity, feed intake and feed efficiency included trial (truck load), Syntabac® treatment and trial by Syntabac® treatment interaction as class variables. In models, excluding Syntabac® treatment, sources of variation with observed significance levels greater than .20 were removed.

Table 2. Composition of feed supplement.

Ingredient	As Fed Basis, %
Soybean meal	88.97
Cottonseed meal	5.00
Salt	3.00
Dicalcium phosphate	2.75
Vitamin A-30,000 IU/g	.11
Deccox 6%[a]	.18
Vitamin E-50%	.09

[a] Deccox, Rhone - Roulenc, Inc., Monmouth Junction, NJ.

Table 3. Effect of Syntabac® on weight gains, morbidity and mortality in stressed cattle.

Treatment	Control	Syntabac®
Number of head	162	159
Number of head never sick	102	96
Arrival weight, lb	527	525
Daily gain, lb[a]	2.10	2.13
Daily gain of head never sick, lb[a]	2.54	2.51
Medical treatment per head[a]	2.8	2.6
Morbidity, %[a]	37.0	40.4
Mortality, %	.0	1.2

[a] Expressed as least squares means.

Results and Discussion

Cattle which were in the Syntabac® treatment group had similar weight gains (2.13 vs 2.10 lb/day) but required fewer medical treatments per head (2.6 vs 2.8) compared to the control animals. The treatment group had slightly higher morbidity than the control group (40.4% vs 37.0%).

No treatment effects were apparent in feed intakes and gain to feed ratios (Table 4).

The effects of the Syntabac® drench on daily gain and medical treatments in the cattle that became sick during the trial are reported in Table 5. Although nonsignificant, daily gains of sick cattle favored the Syntabac® cattle over the control cattle (1.92 vs 1.86 lb, respectively) as well as in mean medical treatments required per head (3.9 vs 4.2). Also, fewer Syntabac® treated cattle were repulled as sick (12.7% vs 16.0%).

Table 4. Effect of Syntabac® on feed intake and gain to feed ratio.

	Control	Syntabac®
Number of pens	14	14
Feed intake, lb[a]	16.68	16.52
Gain/feed[a]	.138	.140

[a] Expressed as least squares means.

Table 5. Effect of Syntabac® on daily gains, medical treatments and repulls in all sick cattle.

	Control	Syntabac®
Number of head	60	63
Average daily gain, lb[a]	1.86	1.92
Medical treatments per head[a]	4.20	3.88
Repulls as sick, %[a]	16.0	12.78

[a] Expressed as least squares means.

Because any probiotic treatment on arrival may have a delayed effect, the data were reanalyzed excluding those animals that detected as sick within 2 days after processing. Cattle treated with Syntabac® had 2.7% faster gain (1.91 vs 1.86 lb/day) and a 3.4% decline in required medical treatments (2.5 vs 2.6) as shown in Table 6. However, the treatment group had an increase in morbidity (25.1% vs 18.4%) over the control cattle.

The effects of Syntabac® on the health and performance of the cattle that became sick during the trials excluding those pulled during the first three days are presented in Table 7. Gains tended to be improved ($p=.16$) (1.76 vs 1.21 lb/day) and mean medical treatments to decrease in treated cattle. Additionally, the sick cattle that became sick a second time tended to be lower (4.7% vs 10.7%) in the Syntabac® group.

Under the conditions of this study, average daily gains, feed intake and feed to gain averaged across all cattle were similar with vs without the use of Syntabac®. However, the number of medical treatments per head for illness

Table 6. Effect of Syntabac® on daily gains, medical treatments and morbidity in stressed cattle with sick head pulled on day 1 and day 2 excluded.

	Control	Syntabac®
Number of head	118	124
Arrival weight, lb	531	526
Average daily gain, lb[a]	1.86	1.91
Medical treatments per head[a]	2.6	2.5
Morbidity, %[a]	18.4	25.1

[a] Expressed as least squares means.

Table 7. Effect of Syntabac® on daily gains, medical treatments and repulls in sick cattle with head pulled during day 1 and day 2 excluded.

	Control	Syntabac®
Number of head	16	28
Average daily gain, lb[a]	1.21	1.76
Medical treatments per head[a]	3.9	3.8
Repulls as sick, %[a]	10.7	4.7

[a] Expressed as least squares means.

was decreased in the treatment cattle by approximately 5% and number of repulls was lower for the Syntabac® group. Further studies are needed before conclusions about efficacy of Syntabac® can be drawn.

Literature Cited

Davis, G.V. 1982. Probios for stressed calves and yearlings. Kansas State Univ. Cattle Feeders Day, Report of Progress 416:30.

Gill, D.R. et al. 1987. The effect of probiotic feeding on health and performance of newly-arrived stocker calves. Okla. Agr. Exp. Sta. Res. Rep. MP-119:202.

Hicks, R.B. et al. 1986. The effect of a microbial culture on the health and performance of newly-arrived stocker cattle. Okla. Agr. Exp. Sta. Res. Rep. MP-118:256.

Hutcheson, D.P. et al. 1980. The use of a living, nonfreeze-dried Lactobacillus acidophilus culture for receiving feedlot calves. Proc. Western Section Amer. Soc. Anim. Sci. 31:213.

Williams, D.L. and J.H. Mahoney. 1984. Pre-weaning and post-weaning nutrition. Proc. 17th Annual Conv. Amer. Assoc. Bovine Pract. p 98.