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EFFECTIVENESS OF ALBENDAZOLE AGAINST PARASITES AND COW AND CALF PERFORMANCE

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Summary

Albendazole was utilized in drench and feed additive form to determine its effectiveness against parasite control, cow weight and conception rate and calf weaning weights. Fecal oocyte number was decreased by administration of Albendazole. Calf weaning weights from treated cows were heavier the first two years (14.5 lb for heifers and 10.5 lb for bulls) but decreased the third year (13 lb and 6 lb for heifers and bulls, respectively). Conception rates were similar between the two groups, with the only difference occurring the third year when control cows had a higher conception rate from the second AI than treated cows.

(Key Words: Beef Cows, Anthelmintic, Reproduction, Performance, Fecal Oocytes.)

Introduction

Presently there are many worming compounds effective against internal parasites. However, many of these compounds are only effective on a limited number of parasite species. Few broad spectrum wormers are presently available for internal parasites. Albendazole is an anthelmintic that appears to control gastrointestinal roundworms, lungworms, tapeworms and adult liver flukes. The addition of another broad spectrum anthelmintic would contribute to increased animal production.

Material and Methods

Ninety-six cows in 1983, 105 in 1984 and 84 in 1985 were utilized to determine the effects of Albendazole (ABZ) on calf weaning weights and reproductive performance in beef cows. Initially, cows were randomly allotted to ABZ treatment or control groups. In subsequent years, cows remained in the same group and new animals were randomly allotted. Treatment dates were either March or April and either November or December of each year. Albendazole was administered (10 mg/kg body wt) as a drench or in a pelleted form as a topdress. Ten fecal samples were collected from each group at the time of ABZ administration (spring and fall) and again approximately 10 days later. Ova in fecal samples were identified and quantitated in the Veterinary Diagnostic Laboratory (SDSU). The first year cows were weighed in the spring and fall; in subsequent years only fall weights were recorded. Calf weights adjusted to 205 days were taken at weaning. Reproductive rates were determined from calving dates for cows remaining in the herd. Cull cow reproductive performance was determined by rectal palpation. Some cows were utilized for embryo transfer and were not included in the calculations. Animals were maintained on a corn silage and alfalfa hay diet during winter supplementation and brome or grass pasture

during the grazing season. The purpose of this study was to confirm the efficacy and safety of a new ABZ formulation for beef cows.

Results and Discussion

The initial treatment of ABZ was given in March, 1983. Prior to ABZ treatment and 10 days following treatment each of the 3 years in the spring and fall, fecal samples were collected from approximately 10 cows in each group. Fecal egg counts for the 3 years are presented in table 1. At the initiation of the trial prior to ABZ administration (spring, 1983), there was an average of 31 oocytes per gram of feces. Fall counts in control cows were also elevated compared to preceding years (19.5 oocytes/g). After the first year, few eggs were present in ABZ-treated or control cows.

Cow weights are presented in table 2. Weights were not taken in the spring of 1984 and 1985 because of extremely muddy conditions. As would be expected, fall cow weights in 1983 were heavier than spring weights. There was no difference ($P>.05$) in cow weights the 3 year of the study. Cows in the ABZ-treated group had heavier weights than control cows, 12, 21 and 20 lb for 1983, 1984 and 1985, respectively. There was no difference ($P>.05$) in calf weaning weights between ABZ and control cows during the trial. The first 2 years calves from ABZ-treated cows had higher weaning weights but were lighter the third year (table 3). Heifer calves during the first 2 years averaged 14.5 lb and bull calves 10.5 lb more from ABZ-treated cows. In the third year heifers were 13 lb less and bulls 6 lb less from ABZ-treated cows. All cows during the 3-year period were managed under identical conditions.

In the first year of study, Hereford cows were used as embryo transplant recipients. Therefore, they were excluded from the reproduction data for 1983. Reproductive results of the two cow groups are presented in table 4. Conception rates were similar between the two cow groups each of the 3 years. No difference ($P>.05$) was present between groups for conception to first service. The only difference ($P<.05$) between groups was in 1985 conception rate to the second AI. One of 10 cows conceived in the ABZ group compared to 6 of 10 in the control group. All cows in the control group conceived during the breeding season in 1984 and 1985.

No side effects or consumption problems were detectable due to ABZ administration during any of the 3 years of the study.

TABLE 1. FECAL EGG COUNTS FROM ABZ TREATED AND CONTROL COWS
(OOCYTES/G FECES)

| | Collected at TBZ treatment | | Collected 10 days after treatment | |
|-------------|-------------------------------|---------|--------------------------------------|---------|
| | ABZ | Control | ABZ | Control |
| Spring 1983 | | 31.0 | .7 | 19.5 |
| Fall 1983 | 2.8 | 5.9 | .5 | 2.0 |
| Spring 1984 | 2.4 | .2 | 1.5 | 8.6 |
| Fall 1984 | .0 | 1.0 | .2 | .7 |
| Spring 1985 | .1 | .7 | .3 | .8 |

TABLE 2. WEIGHTS (LB) OF ABZ-TREATED AND CONTROL COWS

| | 1983 | | 1984 | 1985 |
|-------------|--------|------|------|------|
| | Spring | Fall | Fall | Fall |
| ABZ treated | 1209 | 1282 | 1213 | 1294 |
| Control | 1181 | 1270 | 1192 | 1274 |

TABLE 3. CALF WEANING WEIGHTS (LB) FROM ABZ-TREATED AND CONTROL COWS

| | 1983 | | 1984 | | 1985 | |
|-------------|---------|-------|---------|-------|---------|-------|
| | Heifers | Bulls | Heifers | Bulls | Heifers | Bulls |
| ABZ treated | 491 | 519 | 485 | 492 | 487 | 506 |
| Control | 473 | 502 | 474 | 488 | 500 | 412 |

TABLE 4. CONCEPTION RATE FOR ABZ-TREATED AND CONTROL COWS

| | | Conception, % | | |
|------|-------------|-----------------|-----------------|------------------|
| | | To 1st AI | To 2nd AI | To clean-up bull |
| 1983 | ABZ treated | 52.6 (16 of 31) | 20.0 (3 of 15) | 50.5 (6 of 12) |
| | Control | 48.3 (14 of 29) | 26.7 (4 of 15) | 54.5 (6 of 11) |
| 1984 | ABZ treated | 45.0 (18 of 40) | 45.5 (10 of 22) | 75.0 (9 of 12) |
| | Control | 54.5 (24 of 44) | 65.0 (13 of 20) | 100.0 (7 of 7) |
| 1985 | ABZ treated | 64.3 (18 of 28) | 10.0 (1 of 10) | 44.5 (4 of 9) |
| | Control | 64.3 (18 of 28) | 60.0 (6 of 10) | 100.0 (4 of 4) |