

EFFECT OF A MONENSIN RUMINAL DELIVERY DEVICE ON WEIGHT GAINS OF GROWING STEERS ON WHEAT PASTURE

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Story in Brief

The effect of a monensin ruminal delivery device on weight gains of wheat pasture stockers was evaluated in a 113-day trial with 60 fall-weaned Hereford and Hereford x Angus steer calves. Treatments were monensin device versus no device (control). The monensin ruminal delivery device increased weight gains by .2 lb/day (2.76 vs 2.56), which is similar to effects of feeding monensin to stocker cattle grazing wheat pasture.

(Key Words: Monensin, Bolus, Wheat Pasture, Stocker Cattle.)

Introduction

Consumption of supplements by cattle grazing pastures is highly variable among animals. Wheat forage is a high-quality, highly palatable forage, and achieving desired levels of supplement consumption by cattle grazing wheat pasture is sometimes particularly difficult. Additionally, many wheat pasture stocker operations are fairly extensive, and some producers are not willing or cannot for practical reasons feed supplements. Rumensin (monensin) is a feed additive that increases rate of weight gain of wheat pasture stocker cattle by about 0.2 lb/day (Horn et al., 1981; Wagner et al., 1984). Administration of monensin to cattle as a ruminal bolus would be advantageous by resulting in a more consistent daily dosage of monensin, and would eliminate labor and equipment cost of supplementation programs. The objective of this trial was to evaluate the effect of a monensin ruminal delivery device (MRDD) on weight gains of wheat pasture stocker cattle.

Materials and Methods

Sixty fall-weaned Hereford and Hereford x Angus steer calves were used in the trial. The calves were from a common cow herd from the OSU Animal Science Range Cow Research Center. After a weaning and receiving period of approximately 28 days, the calves were weighed and randomly assigned to treatments within breed and three initial weight groups to two treatments (i.e., MRDD versus no device). The MRDDs contained a core of 16.5 g monensin incorporated into a controlled release polymer and were prepared by Animal Products Development, Lilly Research Laboratories, Greenfield, Indiana. Expected rate of release of monensin from the devices was 100 mg/day.

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The calves were vaccinated for IBR, BVD, PI₃, 7-way clostridium and 5-way Lepto during the receiving period, and the MRDDs were administered to the calves 11 days prior to placing the calves on wheat pasture. All calves were implanted with Compudose, and fecal grab samples were collected from half the steers, during the initial weighing prior to being placed on wheat pasture, for coccidia oocysts counts. Levels of fecal oocysts were minimal.

The steers grazed a single wheat pasture of 120 acres at the Forage and Livestock Laboratory (El Reno, Oklahoma) from November 18, 1985 to March 11, 1986 (113 days), and had free choice access to water and a commercial mineral mixture throughout the trial.

Live weights of the steers were measured (dates indicated in table 1) after an overnight shrink of about 16 hours in drylot without feed and water. Individual weights of the steers at the beginning and end of grazing wheat pasture were measured twice. The steers were observed daily for signs of bloat through the wheat pasture grazing period.

Two steers (1 of each treatment) were removed from the trial because of lameness and poor performance. Data of 4 steers (1 control and 3 MRDD) were deleted because we could not detect the Compudose implant by palpation at the end of trial. Data were analyzed by analysis of variance using the General Linear Models procedure of the Statistical Analysis System.

Results and Discussion

Least square means of initial and final weights, daily gains during the three periods of the trial and for the total trial (113 days) are shown in Table 1. The MRDD increased ($P < .004$) gains of steers during

Table 1. Least square means by treatment^a.

	Treatment		OSL ^b	
	Control	MRDD ^c	Treatment	Trt \times IWTGP ^d
Initial wt., lb	409	417	.35	.56
Final wt., lb	699	729	.01	.57
Daily gains, lb				
Period I, 11/18-12/19/85, 31 days	1.35	1.79	.002	.18
Period II, 12/19-1/30/86, 42 days	3.51	3.68	.15	.44
Period III, 1/30-3/11/86, 40 days	2.52	2.55	.71	.45
Overall, 11/18-3/11/86, 113 days	2.56	2.76	.004	.12

^aModel included effects of treatment, initial weight group (IWTGP) and treatment by IWTGP interaction.

^bObserved significance level.

^cMonensin ruminal delivery device.

^dTreatment by initial weight group interaction.

⁶Wheat Gainer Mineral No. 2. Farmland Industries. Guaranteed analysis: CA 15-17%, Mg 10.0%, P 4.0%, salt 19-21%, I .0002%, Vitamin A, 100,000 USP Units/lb.

period I and for the total trial by .44 and .20 lb, respectively. The treatment by initial weight group interaction for the overall daily gains of the steers tended to be significant ($P = .12$), and an explanation for the interaction is not apparent. Daily weight gains of steers of initial weight groups 1 (354 lb), 2 (419 lb) and 3 (467 lb) for the total trial were increased, respectively, .35, .02 and .23 lb by the MRDD. Therefore, there was no indication that the effectiveness of the MRDD decreased as initial weight of the steers increased.

Weight gains were exceptionally good during period II, and are attributed to the fairly slow "start" of the steers and to the very mild and open winter. Hay was fed on only four days of the trial (i.e., 12/13, 2/8, 2/10 and 2/12) because of light snow cover of wheat pasture. About 10 lb/head of old world bluestem hay was fed on each of these 4 days. In total, the 1985-86 wheat pasture year was very mild and weight gains of stocker cattle were exceptionally good.

Watson and Laby (1978) and File et al. (1980) reported significant ($P < .05$) live weight gain responses of growing steers or heifers to an intraruminal continuous release capsule that provided monensin. The capsules were reported to provide 114 to 180 mg monensin per day, and the cattle grazed ryegrass and subterranean clover or spring and autumn white clover, fescue and phalaris pastures.

The MRDD containing 16.5 g monensin that was used in this trial was effective in increasing live weight gains of growing cattle on wheat pasture. Weight gains of steers that weighed about 350 to 470 lb at the start of the 113-day grazing period on wheat pasture were increased .20 lb/day by the MRDD. Bloat was not observed in any of the steers during the trial.

Literature Cited

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