IMPACT OF INCLUDING DL-METHIONINE IN DRINKING WATER FOR ANGORA GOATS

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Story in Brief

Fourteen castrated male goats (33 kg) were given ad libitum access to a 40% roughage diet (13.8% protein; .15% Sulfur) for 60 days. Three or four kids each received either 0 (basal), 2.5, 5.0 or 7.5 g DL-methionine daily in their drinking water. Water intake tended to be delayed for goats receiving the highest methionine level. Feed intake tended to increase when methionine was included in the water. Shorn body weight gains also tended to increase when methionine was added in the drinking water. Grease fleece weights tended to increase with methionine supplementation. Providing 2.5 g methionine daily increased clean mohair production by 37%. Mohair diameter and length tended to be lowest for goats receiving 5 g methionine daily. Percentages of undesirable (med and kemp) fibers were not altered by methionine supplementation. The concentration of methionine in plasma was markedly increased while serine was decreased by adding methionine to drinking water. Results indicate that methionine as a water supplement increased mohair production without increasing mohair diameter. Response to methionine in water needs to be tested with goats fed a higher dietary sulfur level to determine if the response can be attributed to an increased supply of methionine or merely to an increased supply of sulfur.

(Key Words: Methionine, Goats, Sulfur.)

Introduction

Nutrient supply for goats and sheep often limits the rate of mohair and wool production. Differences in nutrient supply can possibly explain why annual mohair production is greater in some countries than in others (South Africa 4.25 kg/goat; USA 3.5 kg/goat; Turkey 2 kg/goat; Argentina and Lesotho 1 kg/goat). Higher rates of fiber production increase economic return to producers. Increasing the post-ruminal supply of sulfur amino acids to sheep has consistently increased wool growth when low levels were provided although higher levels have depressed wool growth and thickened the fiber which is undesirable. Work by Garza et al. (1990) indicated that 40 to 80% of water consumed by beef cattle bypassed the rumen. Based on this concept, we tested

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the impact of supplemental methionine in drinking water for Angora goats. We provided several levels of supplemental dietary DL-methionine and monitored performance and mohair growth rates.

Materials and Methods

Dietary supplements of DL-methionine (0, 2.5, 5.0, and 7.5 g per day) were provided in the drinking water to each of three or four goats maintained in metabolism crates for 60 days. Three-year old male castrated goats were divided into four treatment groups on a complete randomized design. Goats were provided with 1 liter of water containing 0, 2.5, 5.0, and 7.5 g per day with their meal. After they consumed this quantity, they were given free access to tap water. All goats had free choice access to a pelleted feed (Table 1) and feed residues were collected once daily.

Jugular blood samples were collected 1 hr before and 1, 2, and 3 hr after feeding in the last day of experimental period for amino acid analysis. Shorn body weights were determined on the first and last day of the experiment. Weight of grease fleece, clean mohair production, fiber diameter, and fiber length were determined. Percentage of undesirable fibers (kemp and med) also was determined.

Results and Discussion

Results are presented in Table 2. Feed intake tended to be increased ($P<.12$) by including methionine in the water. Shorn body weight gains also tended to be increased ($P<.13$) by including methionine in the drinking water.

Table 1. Diet composition (dry matter basis)[a].

Ingredient	%
Cottonseed hulls	40.3
Corn grain, ground	34.2
Alfalfa meal	7.8
Soybean meal	15.8
Limestone	.3
Dicalcium phosphate	.5
Trace mineral mix	.9
Vitamin ADE mix	.2

[a] Chemical composition: 13.8% crude protein; .15% sulfur.

Table 2. Responses to DL-Methionine in drinking water.

Treatment, g/d	0	2.5	5.0	7.5	Probability
Feed intake, g/d	1535	1839	1860	1739	.12
Body gain, shorn g/d	219	267	282	280	.13
Fleece, kg	.85	1.29	.94	.86	.09
Clean mohair, kg	.72	.99	.76	.73	.12
Kemp fibers, %	.15	.13	.18	.18	.72
Med fibers, %	.29	.30	.35	.32	.83
Fiber diameter, um.	37.1	37.0	34.4	37.8	.47
Fiber length, cm.	2.22	2.29	2.07	2.25	.84

Weights of grease fleece tended to be increased (P<.09) by methionine supplementation but 2.5 mg/day appeared to be a threshold. Compared with kids receiving no supplemental methionine, providing 2.5 g methionine daily tended to increase (P<.12) clean mohair production by 37%.

Literature Cited

Garza, J D. et al. 1990. Okla. Agr. Exp. Sta. Res. Rep. MP-129:114.