

Growth rate of dairy goats offered different nitrogen sources

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Different dietary nitrogen (N) sources offered to sheep showed non significant responses in dry matter intake and diet digestibility (1) and microbial protein synthesis in the rumen (2). Hadjipanayiotou and Koumas (3) showed no effect of dietary N sources on growth rate of female-weaned Damascus kids. The present study examined the effect of different N sources on intake, diet digestibility and growth rate of growing dairy goats.

Sixteen, 6-7 month-old female goats (Angora x Anglo-Nubian) weighing 15 ± 2.2 kg were penned individually and randomly assigned in a 4 x 4 latin square designed experiment. In each period, four animals were offered one of four isoenergetic diets (3 Mcal ME/kg DM) containing either barley meal alone (Barley) or barley meal with either soybean meal (Soy bean), cotton seed meal (Cotton seed) or urea (Urea). Except for the Barley diet (1.7% N), all other diets were isonitrogenous (2.9% N). Barley hay (1.1% N; 1.55 Mcal/kg) was offered in equal proportion to concentrate diets, and the total diets were offered in amounts to ensure body weight gain (4).

	Barley	Soy bean	Cotton seed	Urea	SEM
Average daily gain (g/day)	90.2	82.3	78.0	78.1	8.18
Daily intake (/kg BW ^{0.75})					
Concentrate (g DM)	38.9 ^a	43.6 ^b	44.6 ^b	41.8 ^b	0.8
Hay (g DM)	22.5	23.3	22.6	21.8	1.1
Total DM (g)	59.3 ^a	64.8 ^b	65.1 ^b	61.6 ^{ab}	1.4
Total nitrogen (g)	0.91 ^a	1.55 ^b	1.53 ^b	1.47 ^b	0.03
Total ME	0.16	0.17	0.17	0.17	0.004
Ratio N : ME (g/Mcal)	5.69	9.12	9.00	8.65	
Diet digestibility (%)					
DM	76.5 ^a	77.5 ^{ac}	75.1 ^{ab}	77.1 ^{ac}	0.47
N	69.0 ^a	78.0 ^b	73.7 ^c	78.5 ^b	0.92

Means within the same row with different superscripts are different (P<0.01)

The addition of N to the diet increased concentrate intake and N digestibility, but had no effect on body weight gain. The lack of response to dietary N supplement was presumably because the ratio of N to ME in all diets was sufficient to maintain adequate microbial protein synthesis in the rumen. We conclude that when sufficient dietary energy is available for microbial protein synthesis, the source of N does not affect rate of growth in growing dairy goats.

1. Milne JA, Christie A, Russel AJF. The effects of nitrogen and energy supplementation on the voluntary intake and digestion of heather by sheep. *J Agric Sci Camb* 1979;92:635-43.
2. Merry RJ, McAllan AB, Smith RH. In vitro continuous culture studies on the effect of nitrogen source on rumen microbial growth and fibre digestion. *Anim Feed Sci Techno* 1990;31:55-64.
3. Hadjipanayiotou M, Koumas A. Effect of protein source on performance of lactating Damascus goats. *Small Ruminant Research* 1991;5(4):319-26.