

**Urinary excretion of purine derivatives in goats**

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Four experiments were conducted to study urinary excretion of purine derivatives (i.e. allantoin, uric acid, hypoxanthine, xanthine) in goat kids. Estimates of microbial N synthesis in dairy goats were calculated from allantoin excretion and from results obtained in goat kids.

In Expt 1 three male kids were bottle fed with goat milk and goat milk gradually supplemented with N-free liquid (18.6 p. 100 butter-fat, 4.0 p. 100 lactose) down to 20 p. 100 goat milk in the diet and back to all goat milk. Energy intake was kept constant at 800 kJ GE/W<sup>0.75</sup>. In Expt 2 three male kids were bottle fed with goat milk and increments of RNA. Energy intake was kept constant at 800 kJ GE/W<sup>0.75</sup>. In Expt 3 three male kids and three female kids were weaned from all liquid feeding in bottle to a dry basal diet (hay : concentrate) plus liquid feeding in bottle. RNA was given in increments in the liquid feed. In Expt 4 three male kids were bottle fed with goat milk at four levels of intake (400, 600, 800 and 1 000 kJ GE/W<sup>0.75</sup>) in two periods (at 2 and at 8 weeks of age).

With decreasing N intake (1 222 mg N/W<sup>0.75</sup> to 223 mg N/W<sup>0.75</sup>), urinary allantoin-N (All-N) and uric acid-N (Ua-N) excretion decreased (9.4 to 6.8 mg All-N/W<sup>0.75</sup>; 2.6 to 1.0 mg Ua-N/W<sup>0.75</sup>), but returned to initial values with increasing N intake. No consistent excretion pattern was observed for hypoxanthine. Xanthine was not detectable in the urine.

Excretion of All-N was markedly increased by the increased intake of RNA, while there was a less pronounced increase in the excretion of Ua-N, hypoxanthine-N and xanthine-N. Changes in the level of feed intake did not markedly affect urinary excretion of purine derivatives. The level of All-N excretion was similar at 2 and 8 weeks of age.

Lactating dairy goats were fed hay : concentrate (40 : 60) either without protein supplement or with varying proportions of urea (0.9, 1.8, 2.7, 3.5 p. 100) or fish meal (3.9, 7.9, 11.7, 15.8 p. 100). All diets were fed *ad libitum* with an adaptation period of at least 2 weeks to a new diet. Feed intake was 800 to 1 800 g digestible organic matter/d. Urine and faeces were collected for 2 weeks. The relationship between urinary allantoin excretion (mg/d) and intake of (g/d) digestible organic matter (DOM) and digestible crude fibre and nitrogen free extracts (DCHO) was : All-N = 1.204 DOM — 156.7, n = 67, r = 0.83, c.v. = 14.8 p. 100, SD = 190. All-N = 1.459 DCHO — 109.3, n = 67, r = 0.81, c.v. = 15.4 p. 100, SD = 198. If we assume a conversion rate of RNA-N to All-N of 50 p. 100, a RNA-N content of microbial-N of 11.4 p. 100, a true intestinal digestibility of RNA-N of 87 p. 100 and a proportion of amino-acid N in microbial-N of 0.80, the flow of microbial amino acid-N was 19.6 g/kg DOM and 23.7 g/kg DCHO. These estimates are in very good agreement with other published values.

*Key words : Purine excretion, goat, microbial protein, kids.*