

THE EFFECT OF HAEMONCHOSIS AND BLOOD LOSS INTO THE ABOMASUM
ON NITROGEN DIGESTION IN SHEEP

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The larval and adult stages of *Haemonchus contortus* suck blood from the abomasal mucosa. In addition to severe anaemia animals show poor growth rates and, in heavy infections, death can result. Although the level of blood loss into the digestive tract has been measured using ^{51}Cr -labelled red cells the digestion and metabolism of the 'lost' blood-nitrogen has not been quantified. The experiment described here was designed to measure the flow of nitrogen through different parts of the digestive tract and body pools in parasitized, uninfected and sham-infected sheep.

Merino wethers, 9 months of age, were prepared with cannulae in the rumen, abomasum, duodenum and ileum. Five animals were infected with *H. contortus* (300 larvae/kg liveweight), five sham-infected by transferring 150 ml blood/d from the jugular vein to the abomasum and there were nine uninfected sheep. All animals were fed at three hourly intervals a diet consisting of (g/kg) lucerne chaff (490); oat chaff (480); ground limestone (10); urea (10) and salt (10). Digesta flow was measured by reference to Cr and Yb. Blood loss into the gut was measured using ^{51}Cr -labelled red cells. ^{14}C -urea was used to measure urea-N kinetics. Results are given in Table 1.

Table 1. Summary of N flows in uninfected, parasitized and sham-infected sheep. Values are in g N/d

	Uninfected	Parasitized	Sham	P (F-test)
Blood N entering the gut	0.05 ^a	2.6 ^c	1.8 ^b	<0.001
Absorption from small intestine				
Non-ammonia N	4.89 ^a	6.74 ^b	6.07 ^{ab}	<0.05
Ammonia N	0.46 ^a	1.67 ^b	0.56 ^a	<0.001
Plasma urea irreversible loss	8.90 ^a	12.24 ^b	10.92 ^b	<0.01
Urine urea N	5.53 ^a	6.94 ^b	6.06 ^{ab}	<0.05
Urine non-urea N	0.94 ^a	1.73 ^b	1.94 ^b	<0.01

a,b,c Values in the same row, with different superscripts are significantly (p<0.05) different.

Most of the N entering the abomasum in parasitized and sham-infected sheep was reabsorbed from the small intestine. In the parasitized animals nearly half of the N entering the gut as non-urea N was re-absorbed as ammonia, suggesting breakdown of blood protein by the parasite. There were increases in plasma urea entry rates in the parasitized sheep and increases in the urinary excretion of urea and non-urea N in both parasitized and sham-infected animals.

The major effect of the parasitism is therefore loss of protein N through breakdown in the gut. The effects of haemonchosis are likely to be more severe in conjunction with intestinal parasites such as *Trichostrongylis* which appear to reduce reabsorption of endogenous protein (Poppi et al 1986).

POPPI, D.P., MACRAE, J.C., BREWER, A. and COOP, R.O. (1986). *Br. J. Nutr.* **55**: 593.

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