

DIGESTIBILITY OF SULPHUR AMINO ACIDS IN RUMEN FUNGAL SPECIES

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The presence of anaerobic fungi in the rumen is now well established, although their absolute contribution to fibre digestion is still unclear. However their cellulolytic capacity and ability to digest plant tissue in vitro (Orpin 1983) suggest that they have an important role in the fibre digestion process. It has been suggested that increasing the fungal populations in the rumen would be of benefit to the animal by increasing fibre digestion (Gulati et al. 1985). This presumably would be at the expense of other microbial species. Consequently it is important that, if the microbial population is altered, the supply of essential amino acids from the biomass to the gastro-intestinal tract is maintained. The digestibility of methionine from *Neocallimastix* sp. LM1 was determined to be 88% (Gulati and Ashes 1987). We now report the digestibility of the sulphur amino acids (SAA), cysteine and methionine, from *Piromonas* sp. SM1 and *Sphaeromonas* sp. NM1, the two other types of fungi commonly found in sheep at our laboratory, (Phillips and Gordon 1988).

The SAA in rumen fungi were labelled by introducing [³⁵S]sulphide into batch culture after 48 h. The fungal biomass was harvested at 96 h and the digestibility of the amino acids determined as previously described (Gulati and Ashes 1987). The results are shown in the Table.

Parameter	<i>Piromonas</i> SM1	<i>Sphaeromonas</i> NM1
Culture Volume (l)	2	2
Radioactivity added (MBq)	18.5	18.5
Dry biomass (DB) yield (g)	1.6	1.3
Specific activity of DB (MBq/g)	0.24	0.33
% of incorporated label in SAA	88	84
% SAA digestibility (Mean and SE)	91 ± 0.5	92 ± 0.4

The yield of biomass from culture of these two fungi was lower than that found for LM1 by Gulati et al. (1987). Approximately 2% of the added label was incorporated into the biomass of both fungi, which amino acid analysis determined to be primarily in the form of the SAA's, cysteine and methionine. The digestibility of the total SAA was not significantly different for the two species and was comparable to that previously reported for methionine in LM1. These results suggest that these two fungi are also capable of supplying important nutrients to ruminants, as they contain SAA's that are highly digested.

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