

# SELECTION BY SHEEP OF DIETS DIFFERING IN SULPHUR CONTENT

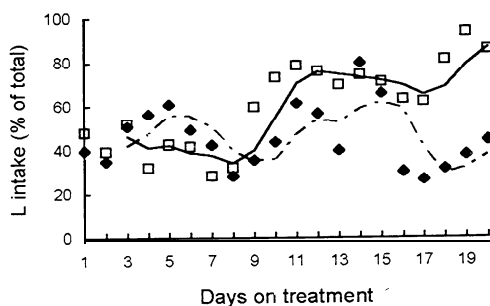
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Recent studies have shown that when offered a choice of feeds with different concentrations of a particular nutrient (crude protein), sheep can select a diet that meets their current requirements (Cropper 1987; Kyriazakis and Oldham 1993). It appears that ruminants can in some way sense the post-ingestive consequences associated with particular feeds and learn how to adjust their intake according to their needs (Provenza 1995). To further test this hypothesis an experiment was set up to examine selection by sheep of diets containing different amounts of sulphur (S).

Thirty-two mature ewes were placed at random in 2 rows of 16 pens (230 x 85 cm) separated by a 1.6 m walkway. Each had access to 2 feed troughs, one at each end of its pen. Troughs next to the walkway were labelled as '1', the other '2'. Five N-adequate diets (L, A, B, C and H) with different S contents (0.86, 1.72, 3.44, 6.88 and 10.3 g S/kg air-dry feed) were formulated from a low-S barley straw, by adding Na<sub>2</sub>SO<sub>4</sub>, urea (30 g urea/kg air-dry feed) and S-free mineral mix. All diets contained similar levels of Na. To lower S status in all sheep, diet L was fed *ad libitum* in all troughs for the first 50 days (period 1). During the next 20 days, the sheep were given a choice of diet L in one trough and one of A, B, C or H in the other trough. There were 4 blocks in each row, 4 pens per block, and one each of diets A, B, C or H was randomly allocated to pens within blocks, and troughs within pens.

During period 1, sheep exhibited a preference, ie. >50% of food eaten (P<0.01) for trough 2 over trough 1, choosing to eat distant or facing away from, rather than closer to or towards, other sheep. During period 2, when the higher-S diets were available as a choice, some factor in addition to trough position influenced trough-choice. During the first 8 days, the L-H ewes showed a slight preference for diet H but then reduced intake of H, presumably to avoid excessive intake of S. In contrast the L-A ewes appeared to discriminate less strongly between feed choices (Figure 1).



**Figure 1.** The percentage of diet L selected by sheep given a choice between diets L (very low S) and H (high S, □) or between diets L and A (low S, ◆). (Curves are 3-day rolling means)

In the case of the L-H ewes this would suggest that the diet and not trough position was the overriding factor that influenced trough preference. That there appeared to be no consistency in this choice for the L-A ewes may have been because both diets contained inadequate S, making it impossible for the sheep to associate a positive response to either diet. These results indicate that, during period 2, the level of S in the diets had an influence on diet choice. This lends some support to previous findings that ruminants are able to select for a feed that rectifies a nutrient insufficiency (in this case, S), whilst avoiding excessive nutrient consumption.

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KYRIAZAKIS, I. and OLDHAM, J.D. (1993). *Br. J. Nutr.* 69: 617-29.

PROVENZA, F.D. (1995). *J. Range. Manage.* 48: 2-17.