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RUMINAL PROTOZOA AND GROWTH OF LAMBS

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Weller and 'Pilgrim (1974) demonstrated that concentrations of protozoa in rumen effluent were 20% of that in rumen fluid, indicating a preferential retention of protozoa in the rumen. This, together with their engulfment of bacteria, suggests that protozoa may reduce the amount of microbial protein available to the animal.

In earlier papers, growth responses to bypass protein were obtained in lambs, indicating that microbial protein does not meet their amino acid requirements. Large protozoa1 populations therefore may lower production in ruminants, particularly on low-protein diets. For these reasons we have confirmed the earlier work of Weller and Pilgrim (1974) by examining rumen and omasal fluid of slaughtered sheep and cattle taken directly from pasture. Results are shown in Table 1.

TABLE 1. Protozoa in ruminal and omasal fluid of slaughtered animals taken directly from pasture

	Protozoal Nos./ml (x 10^{-5})	
	Steers (4)	Sheep (6)
Ruminal fluid	5.0 ± 1.2	7.5 ± 0.6
Omasal fluid	0.5 ± 0.9	0.6 ± 0.1

Also we have studied the effects of defaunation in lambs on a low-protein diet supplemented with a bypass protein (fishmeal). The animals were defaunated by giving 15 ml of a commercial Teric GN9 (see Wright and Curtis 1976) directly into the rumen and were maintained protozoa-free for 6 weeks. Control animals were held in the same animal house but were separated by a distance of 4 m from the protozoa-free animals, which were isolated from all animals. Results are shown in Figure 1.

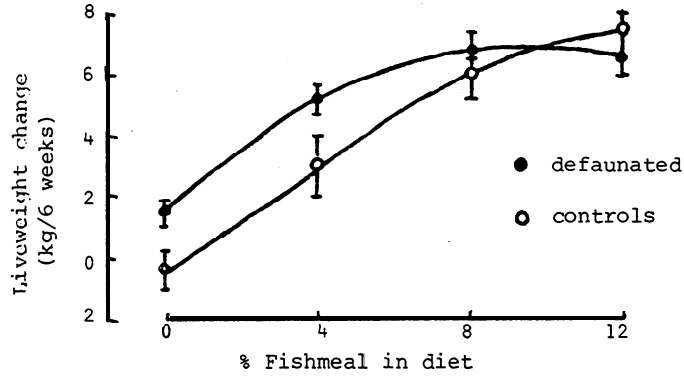

Figure 1. Effect of defaunation on growth of lambs fed on diets with varying levels of bypass protein.

The results confirm the retention of protozoa in the rumen and indicate their detrimental effect on production in ruminants -when the levels of dietary protein are low; they further indicate a sensitive area for manipulation of rumen function.

WELLER, R.A. and PILGRIM, A.F. (1974). Br. J. Nutr. 32: 341.
WRIGHT, D.E. and CURTIS, M.W. (1976). N.Z. J. Ag. Res. 19: 19.

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