

ESCAPE PROTEIN SUPPLEMENTATION OF LAMBS
I. DIFFERENTIAL RESPONSE IN GASTROINTESTINAL TRACT AND CONTENTS

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The liveweight (LW) response of ruminants to escape protein is variable. The present work was part of a larger study to determine factors contributing to this variation. Here we report data on the response of the gastrointestinal tract (GIT) and its contents to escape protein supplementation of lambs following two different growth histories.

Second cross BLxMo-Hyfer wether weaners, 12 weeks of age (20kg LW) were fed as two groups. One group (LL) was fed low quality roughage to maintain LW for 12 weeks, while the other (HL) was fed a high quality diet to 40 kg LW. All animals were then individually penned and fed ad libitum for 4 weeks a diet based on wheat straw (45% dry matter digestibility, 0.5% N, to which was added each day 12 g urea, minerals and 50 g lucerne chaff). Following this either 0, 20, 40, 60, 80 g/day formaldehyde treated casein (mixed with 10 g molasses) was given as a supplement for a further 14 weeks. All animals were slaughtered and organ weights and contents determined (Colebrook et al. 1988). Fleece free empty body weight (FFEBW) was calculated as LW minus weight of wool and contents of the GIT. RI = roughage intake, RR = reticulo-rumen, AB = abomasum, SI = small intestine. Results are shown in the table. Significant responses were observed in the HL group and although similar trends occurred with the LL lambs, mortalities limited the sensitivity of the analysis. * indicates effect of supplementation (P<0.05)

Treatment	n	RI g	FFEBW kg	Organ Content			Organ Weight		
				RR kg	AB g	SI g	RR g	AB g	SI g
HL 0	(4)	454	17.0	3.54	176	706	381	89	333
20	(4)	539	17.2	5.57	153	633	443	88	342
40	(4)	641*	19.7	7.24*	218	677	577*	110*	425
60	(4)	642*	21.5*	7.14*	319*	681	566*	107*	473*
80	(4)	673*	22.1*	7.75*	357*	667	562*	110*	508*
LL 0	(2)	560	11.1	3.69	127	414	351	77	299
20	(2)	563	10.3	3.91	124	522	360	70	296
40	(2)	649	12.1	4.51	201	653	432	91	335
60	(4)	609	13.6	5.23	248	552	470	84	342
80	(3)	527	12.3	5.10	142	466	419	76	328

In the HL lambs, RR and AB content and weight reflected increased intake following supplementation whereas the weight of the SI responded to nutrient quality rather than weight of SI contents. Relative to HL lambs, the smaller LL lambs were limited by rumen capacity and body energy reserves which resulted in smaller increases in RI and slower organ growth, or mortality.

COLEBROOK, W.F, BLACK, J.L, BROWN, G.H. and DONNELLY, J.B. (1988).
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