

ESCAPE PROTEIN SUPPLEMENTATION OF LAMBS  
II. DIFFERENTIAL RESPONSE IN ORGAN WEIGHT

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Escape protein supplementation and growth history of lambs eating a low quality roughage diet affects the weight and content of the gastrointestinal tract (Edwards et al. 1989). In this paper the effect on some major body organs, is presented.

The lambs and their growth history, diets and experimental design were described in the preceding paper (Edwards et al, 1989). Treatment HL refers to previously well grown lambs changing from a high to a low plane of nutrition, LL refers to lambs on a low plane of nutrition throughout the study. Escape protein was given at 0, 20, 40, 60, 80g formaldehyde treated casein/d. Lambs were killed after 14 weeks on escape protein supplemented diets. Organ weights are shown in the accompanying table. Fleece free empty body weight (FFEBW) was calculated as liveweight minus weight of wool and contents of the entire gastrointestinal tract. Weight of muscles is the sum of the weights of M.triceps, M.vastus lateralis and M.semitendinosus. Hide weight is weight of skin minus weight of wool. \* indicates a significant effect of escape protein supplementation ( $P<0.05$ ).

Treatment	n	FFEBW kg	Hide kg	Brain g	Kidneys g	Liver g	Heart g	Muscles g
HL 0	(4)	17.0	1.67	91.1	60.6	284	107	410
20	(4)	17.2	2.07	93.5	74.1*	295	114	502*
40	(4)	19.7	2.42*	89.9	79.7*	310*	115	542*
60	(4)	21.5*	2.58*	91.1	80.2*	309*	115	614*
80	(4)	22.1*	2.80*	89.6	90.9*	327*	125	682*
LL 0	(2)	11.1	1.02	95.2	67.6	199	80.4	208
20	(2)	10.3	1.17	75.2	60.4	210	74.5	256
40	(2)	12.1	1.27	94.9	65.6	226	95.2	240
60	(4)	13.6	1.48	88.1	68.0	261*	90.9	298*
80	(3)	12.3	1.46	83.8	69.2	245*	91.0	284*

Response to escape protein supplementation, expressed as a proportion of FFEBW were :- muscle weight increased ( $P<0.05$ ), and was greater in HL than LL lambs ( $P<0.05$ ); hide weight increased ( $P<0.05$ ) in HL but not LL lambs; kidney and liver weights were not significantly affected by supplementation.

These results suggest that response to protein supplementation differs between organs, and with growth history of animals. It appears that HL lambs used escape protein to maintain protein stores in muscle and skin. By contrast, the poorer response of LL lambs seemed to be limited by an inability to increase energy intake sufficiently for organ growth.

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