

NUTRITION INDUCED CHANGES IN THE COMPOSITION OF LAMBSKIN

R.S. Hegarty and A. Hendry

Nutrition substantially affects the physical properties of sheep skin such as its thickness (Lyne, 1964), wool production (Williams and Thornberry, 1992) and ease of removal from the carcass (Anderson et al., 1991). While these factors affect the most suitable end use of the pelt, little is known of how nutrition affects the chemical composition of the skin which may affect behavior of the pelt during processing. As part of a large study to determine the effects of growth path and nutrient balance on body composition of lambs, nutritional impacts on the chemical composition of the skin were assessed.

Crossbred lambs (n = 112, 35 kg LW) approximately 4 months of age were housed in individual pens. During period 1 lambs were randomly allocated to either ad-libitum (High) or maintenance (Low) intake of pelleted lucerne and triticale (60:40) until the high intake group reached an average of 50 kg LW. Sheep were then adjusted to an intermediate diet for 4 weeks (Period 2) before being randomly allocated to finishing rations of 3 energy densities with each of 4 levels of protected protein supplements (Period 3). After 12 weeks all lambs were killed and fresh skin samples (30cm x 20cm) taken from the main portion of the pelt and frozen (-18°C) until analysed for water fat and nitrogen content (Table 1).

TABLE 1 Chemical composition of skin from lambs fed a low or high intake in period 1 then finished on diets of different energy density in period 3. (*: indicates the probability of differences between adjacent means being significant)

	Feeding level (Period 1)			Energy density (M/D) (Period 3)			
	Low	High	Difference*	7.7	9.2	10.9	Difference*
DM %	24.8	25.6	<.1	24.6	25.2	25.8	ns
Fat %	16.0	20.9	<.0001	15.9	17.9	21.6	<.0001
N %	12.76	11.92	<.01	12.69	12.43	12.19	ns

At slaughter, lambs which had been fed to maintenance in period 1 had a higher proportion of protein and a lower proportion of fat in the skin than did lambs fed ad-libitum over this period. This carry over effect was not affected by the diet offered in period 3. During period 3 there was a positive effect of energy density on the fat content of the skin but no main effects of dietary protein on the skin were observed. Such variation in skin composition may affect the uptake of tanning agents and dyestuffs by the skin as well as the physical properties of the finished leather.

Lyne, A.G. (1964). *Aust. J. Agric. Res.* 15:788

Anderson, M.K., Field, R.A. and R.J. McCormick (1991). *J. Anim. Sc. (suppl 1.)* 343.

Williams, A.J. and K.J. Thornberry (1992). *Proc. Aust. Soc. Anim. Prod.* 19:138.