

EFFECTS OF AMINO ACIDS ON FIBRE SHEDDING IN REPRODUCING EWES

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Tender fleeces result from a reduction in fibre diameter, and if fibre diameter falls below 8-12 μm the fibre will shed with the formation of a club-end (Lang, 1945). Pregnancy and lactation decreases average fibre diameter by up to 1.5 μm and staple strength by up to 30 N/ktex (Masters, 1992) and an increase in the frequency of tender fleeces. The effects of amino acid supplementation on the relationship between fibre shedding and staple strength were investigated during late pregnancy and early lactation.

Thirty-three pregnant Merino ewes were fed oaten hay and lupins (75:25) to maintain empty live weight. Eleven ewes were administered 0.3 mol/L NaOH solution (C) as controls, 11 were given DL-methionine (2.5 g/kg feed) (M) and 11 a mixture of L-valine (4.2 g/kg feed), L-arginine (2.5 g/kg feed), L-lysine (5.6 g/kg feed) and L-threonine (3.3 g/kg feed) (VALT). Amino acids (in 0.3 mol/L NaOH) were injected daily, via abomasal cannulae, in equal proportions 2 and 6 h after feeding, commencing on day 128 of pregnancy and continuing until day 21 of lactation. Fleece weights were recorded and midside samples collected for measurement of yield, fibre diameter (FD), and strength (SS). Fibre ends at the point-of-break (POB) were stained with picric acid and eosin, to determine the incidence of club-end formation (CE). Table of results as means \pm se.

Treat	Yield %	CFW kg	FD μm	SS N/ktex	CE %	CE %(SS < 30)	CE %(SS > 30)
C	73 \pm 1	2.2 \pm 0.1	22.4 \pm 0.6	34 \pm 4a	6.2 \pm 1.4ab	11.4 \pm 2.2	3.2 \pm 0.3a
M	70 \pm 1	2.1 \pm 0.1	22.4 \pm 0.6	24 \pm 4ab	3.5 \pm 0.5a	4.3 \pm 0.7	2.6 \pm 0.5a
VALT	71 \pm 1	2.1 \pm 0.1	23.2 \pm 0.5	21 \pm 3b	9.4 \pm 2.0b	8.6 \pm 2.5	11.3 \pm 3.5b

Means with different letters within columns are different ($P \leq 0.05$)

Within the C group, staple strength ranged from 13 to 51 N/ktex and the incidence of CE ranging from 2 to 17% at the POB. Fleece >30 N/ktex (sound) and <30 N/ktex (tender) averaged 3.2 \pm 0.3 and 11.4 \pm 2.1 %CE ($P < 0.01$). Correlations between SS and CE, CE and FD, and CE and CFW were -0.825, -0.665 and -0.740 respectively. Staple strength was reduced by the VALT supplement ($P < 0.05$). CE increased ($P < 0.05$) with the VALT supplement, overall and within the sound group of fleeces. The M supplement did not significantly alter CE.

Regression analysis shows that wool follicle telogen as measured by CE at the POB is significantly related to staple strength with high rates of occurrence of CE in the tender fleeces of C. The role of follicle telogen and FD changes in SS warrants further study.

LANG, W.R. (1945) *J. Text. Inst.* 36:1.

MASTERS, D.G. (1992) In: Scaramuzzi, R.J. 'Reproductive Management of ewes for extensive wool production' *Proc. Aust. Soc. Anim. Prod.* 19:206.

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