

Immunisation of pregnant Merino ewes against somatotropin release inhibiting factor (SRIF) influences wool production of their twin lambs

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Immunisation of pregnant ewes against SRIF increases productivities such that milk yields of ewes and growth rates of lambs are greater for immunised than control ewes (1). This study was conducted to evaluate effects of immunising pregnant ewes on wool characteristics of twin lambs.

Sixteen multiparous medium-wooled Merino ewes, confirmed pregnant with twin foetuses after synchronised mating using semen from a single ram, were used. They were immunised against SRIF (I, n = 8), or given appropriate placebo injections (NI; n = 8) on approximately days 90, 111 and 132 of pregnancy. The two different vaccines were: SRIF (c 0.5 mg) plus muramyl dipeptide incorporated in Freund's incomplete adjuvant (SRIF/FIA/MDP; n = 4); or a preparation of SRIF (c 100 µg of SRIF equivalent) coupled to polylysine; and incorporated in non-irritant marine oil obtained from Inovax, Nedlands, WA (SRIF/LYS/MO; n = 4). Both vaccines and corresponding placebo injections were administered subcutaneously on the inner thigh. Throughout pregnancy ewes were maintained at pasture supplemented during the last three to four weeks with a mixture of lucerne chaff:rolled barley (4:1, w:w, air dry). Immediately after parturition each ewe and its twin lambs were penned indoors and ewes were fed sufficient lucerne chaff:rolled barley, as above, to support estimated requirements for maintenance plus milk production of 2 kg/d. Skin biopsies were obtained from the lambs at birth then at six weeks of age and wool was clipped from a patch (100 cm²) at six weeks of age. Mean values ± standard errors of means for wool and fibre characteristics are summarised below.

	SRIF/MDP/FIA		SRIF/LYS/MO	
	NI	I	NI	I
Greasy wool (g/100 cm ²)	6.3 ± 0.21 ^b	5.5 ± 0.22 ^a	5.1 ± 0.30 ^a	6.4 ± 0.44 ^b
Fibre diameter (µm)	19.7 ± 0.25 ^a	19.1 ± 0.27 ^a	19.6 ± 0.32 ^a	18.8 ± 0.28 ^b
Fibres >30 µm (%)	3.8 ± 0.71	3.1 ± 0.72	3.8 ± 0.76	3.2 ± 0.72
Medullated fibres (number/6000)	18.3 ± 3.69	12.2 ± 1.87	42.6 ± 25.96	22.4 ± 1.87
Primary follicles †				
: birth	13.3 ± 1.76	17.3 ± 1.44	12.8 ± 2.33	16.5 ± 0.83
: 6 weeks	5.7 ± 0.41	6.5 ± 0.34	5.7 ± 0.47	9.6 ± 3.35
Secondary follicles †				
: birth	56.9 ± 4.63	63.2 ± 5.73	59.1 ± 5.53	66.5 ± 5.69
: 6 weeks	92.0 ± 6.46 ^c	101.2 ± 7.31 ^{cd}	100.4 ± 15.33 ^{cd}	117.8 ± 5.36 ^d

Values with different superscripts differ significantly: a,b= P<0.05; cd=P<0.10; † mean number of follicles/microscope field, x 40, n=6

Lambs of ewes immunised with SRIF/LYS/MO produced more and finer wool than corresponding control lambs and it appears that this was due to maturation of more secondary follicles post-partum. Although results for lambs immunised with SRIF/MDP/FIA were equivocal overall trends were similar. It is of interest that overall milk yields of ewes immunised with SRIF and growth rates of lambs were higher than for control ewes (data not shown) indicating better nutrition of lambs and possibly explaining the maturation of greater numbers of secondary follicles post-partum.

1. Westbrook SL, Chandler KD, McDowell GH. Immunisation of pregnant ewes against somatotropin release inhibiting factor increases growth of twin lambs. Aust J Agric Res 1993;44:229-38.