

THE EFFECT OF VACCINATION WITH IRRADIATED INFECTIVE LARVAE OF *TRICHOSTRONGYLUS COLUBRIFORMIS* ON FAECAL EGG COUNTS OF ANGORA AND CASHMERE GOAT KIDS

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Emery *et al.* (1999) reported that stronger protective immunity can be induced in neonatal lambs by trickle infection with *Trichostrongylus colubriformis* (*Tc*) larvae than in 4 m.o. lambs given a similar infection. Oral vaccination with live radiation-attenuated third stage infective larvae (ILV) could be a safer method of inducing immunity in neonate small ruminants than use of virulent larvae as a high proportion (~90%) of ILV fail to complete maturation in the host and those that do are sterile.

Our study investigated the response to ILV of 222 Angora and 212 Cashmere goat kids on two commercial farms near Barraba in northern NSW, Australia. Half of the kids, selected at random were orally vaccinated with *Tc* ILV at 1 and 2 months of age (5,000 and 14,000 larvae respectively, Vac) with the remainder not vaccinated (Unvac). All kids were subjected to natural nematode infection up to 5 months of age with individual faecal egg count (FEC) determined at 3 and 5 months of age, followed in each case by anthelmintic treatment to terminate the infection. One week after anthelmintic treatment at 5 months of age, all kids were challenged with an oral dose of 10,000 infective L₃ larvae of *Tc* and FEC determined 28 and 35 days later. All *Tc* larvae used were of the CSIRO McMaster strain. Attenuation was by exposure to a gamma radiation source for approximately 2 h providing 450 Gy exposure.

FEC data were analysed with and without cube root transformation to ensure normality. Transformation did not alter the conclusions, so untransformed data are presented. Results are summarised in Table 1.

Table 1. Mean (\pm SEM) FEC of Angora and Cashmere kids vaccinated (Vac) or not (Unvac) with irradiated L₃ of *T. colubriformis* and 1 and 2 months of age.

Kid age	Angora mean FEC (eggs/g faeces)			Cashmere mean FEC (eggs/g faeces)		
	Unvac	Vac	P value	Unvac	Vac	P value
3 months ¹	139 \pm 32	120 \pm 18	0.60	623 \pm 74	650 \pm 94	0.82
5 months ¹	987 \pm 88	1021 \pm 81	0.77	2150 \pm 283	1836 \pm 219	0.38
6 m. d28 ²	2676 \pm 161	2907 \pm 170	0.32	1626 \pm 71	1751 \pm 76	0.23
6 m. d35 ²	2752 \pm 139	3400 \pm 189	0.006	1812 \pm 86	1743 \pm 79	0.55

¹Natural infection, mainly (>90%) *Haemonchus contortus*. ²Induced infection with *T. colubriformis*.

ILV with *Tc* larvae had no effect on FEC during natural infection primarily with *H. contortus*. Following artificial challenge with *Tc* FEC was unaffected in vaccinated Cashmere goats but elevated in vaccinated Angoras. The cashmere findings are consistent with sheep studies suggesting that vaccination with ILV *Tc* is less successful in the field than in pens (Winton, 1991). The elevated FEC in vaccinated Angoras was unexpected and suggests that some form of immunological tolerance was induced in these animals. Woolaston *et al.* (1997) observed increased *Haemonchus contortus* FEC in lambs at pasture following vaccination with a recombinant *H. contortus* vaccine.

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