THE IMMUNE RESPONSE OF SHEEP TO LARVAE OF *LUCILIA CUPRINA*

MARGARET ELLIOTT*, W.A. PATTIE* and C. DOBSON**

Blowfly strike is a major problem in the sheep industry throughout Australia. Research into preventive and control measures has been partially successful, but there is no published work on the immune responses of sheep to myiais.

Two groups, each of eight ewes (one group comprising struck sheep and the other, sheep not struck during two summers) were obtained from southeast Queensland. A further unrelated and unselected group of four ewes was obtained from the University Farm, Brisbane. Serum samples were collected from all ewes prior to lambing and the ewes and their lambs for five weeks after lambing. Serum samples were collected from the third group of ewes and lambs at lambing and 24 hours later. Colostrum samples were also collected from these ewes. All lambs were raised in a fly-proof pen. Third-stage larvae of a wild strain of *Lucilia cuprina* and a strain maintained in the laboratory for more than 50 generations were homogenized and compared for antigenicity.

Tables 1 and 2 give serum and colostrum antibody titres measured by indirect haemagglutination.

TABLE 1 Serum antibody titres in struck and non-struck groups

		Struck				Non-struck			
		Sheep		Lambs		Sheep		Lambs	
	Number	8	(2)+	2	(2)	7	(6)	7	(6)
Laboratory	Antibody titre	1.4	(1.5)	3.0	(3.0)	1.2	(1.7)	3.1	(3.0)
antigen	S.E.	0.3	(0.5)	1.0	(1.0)	0.3	(0.3)	0.4	(0.5)
Wild	Antibody titre	34.8	(40)	20.0	(20)	22.3	(23.3)	7.1	(5.6)
antigen	S.E.	8.9	(24)	12.0	(12)	7.7	(9.0)	1.6	(0.8)

\+ Data for ewe-lamb pairs between parentheses.

TABLE 2 Serum and colostrum antibody titres in group 3 at lambing (wild strain antigen)

		Lambing (ewes)			Post lambing	
	n	Prelambing	Precolostral (lambs)	Colostrum	24 hrs	Mean (11 wks.)
Ewes	3	2.0	2.6	1365.3	2.6	3.3
S.E.		0.0	0.7	341.3	0.7	0.2
Lambs	4	-	0.0	-	4.0	1.6
S.E.		-	0.0	-	0.0	0.1

In each case the antibody titres of ewes and lambs from the struck group were higher than those from the non-struck group but the differences were not significant. There was no change in the antibody titres for five weeks after lambing and lamb antibody titres remained half those of their dams (mean difference 19.5 ± 5.0). Wild strain antigen was significantly more reative than laboratory strain antigen in both lambs and ewes ($P < 0.01$). These data suggest that the laboratory flies have become biologically dissimilar to their wild counterparts.

There were no antibodies in the lamb sera before suckling; therefore antibodies present after suckling must have come from their dams' colostrum. This is supported by the strong antibody titre of the colostrum and is reflected in the significantly higher antibody titre in the lamb sera 24 hours after birth ($P < 0.05$).

* Dept. of Animal Production, University of Queensland, St Lucia, Qld 4067.
** Dept. of Parasitology, University of Queensland, St Lucia, Qld 4067.