

## IMMUNOGLOBULIN LEVELS AS AN INDEX OF SURVIVAL OF MULTIPLE BORN LAMBS

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Multiple born lambs have higher mortality levels than single born lambs, with multiples usually dying from starvation. If a lamb commences to suck soon after birth then serum immunoglobulins (Ig) levels rise rapidly and peak about 24 hours after birth (Klobasa et al. 1985). Thus a measure of serum Ig in the lamb should indicate if colostrum has been consumed. The aim of this experiment was to examine if serum Ig levels one day after birth would give an indication of the survival chances of lambs.

Serum was obtained 18 to 30 hours post-partum from 99 lambs born to Booroola and Control merino ewes used for a supplementary feeding experiment (Hall et al. 1987). After lambing each litter had been penned individually with its dam. Lambs found dead within four days of birth were examined for cause of death and survival rates were assessed at nine days post-partum. The level of serum Ig was estimated utilizing a sodium sulphite precipitation test (Pfeiffer and McGuire 1977) which scores the Ig concentrations as <5, 5-15 and >15 mg/ml.

Serum Ig levels were closely related to survival (Table 1). The autopsys on the 11 lambs with Ig <5 mg/ml showed no trace of milk or meconium. Of the four dead lambs with serum Ig of 5-15 mg/ml, two were attributed to starvation, one to predation of a lamb that had fed and one lamb was missing. In the four litters (13 lambs) where all lambs were sampled and at least one lamb died, the lamb(s) which died from starvation always had the lowest serum Ig levels. The mean birth weight of the multiple born lambs was 2.47 (SE  $\pm$  0.12, range 1.7 to 3.5) kg for dead lambs and 3.19 ( $\pm$  0.08, 2.1 to 4.5) kg for surviving lambs ( $P < 0.01$ ) but serum Ig levels were not significantly related to birth weight.

Table 1. Serum Ig levels estimated in single and multiple born lambs classified according to whether lambs were alive or dead nine days post-partum.

Litter size	Singles			Multiples		
Serum Ig (mg/ml)	< 5	5-15	> 15	< 5	5-15	> 15
Alive	-	1	34	2	6	37
Dead	-	-	1	11	4	4

Serum Ig levels gave a good indication of whether a lamb had sucked and its survival probability. Once satisfactory serum is obtained the test can be completed in about 10 minutes and thus the test may be useful in an intensive lambing system. However, one must consider whether blood sampling may involve an interference which could prejudice survival.

## REFERENCES

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