

EVALUATION OF SIROMIN AS A COPPER SUPPLEMENT FOR SHEEP

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SIROMIN was developed by CSIRO as a complete mineral supplement for sheep grazing dry pasture in southern Australia (Davidson 1989/90). As SIROMIN contains molybdenum (Mo) and other elements which can reduce the availability of Cu, there is concern that, particularly when pasture Mo concentrations are high, there may not be sufficient Cu in the mix to prevent Cu deficiency. The aim of this experiment was to examine the effectiveness of SIROMIN in raising the Cu status of sheep grazing dry summer and autumn pasture of high Mo content.

A 7 ha paddock at Kybybolite Research Station with mean pasture Mo and Cu concentrations (mg/kg DM) of 4.4 and 8.6 respectively was split into 2 equal paddocks. Merino wethers were blocked on the basis of liver Cu concentration and liveweight and allocated at random to 1 of 2 treatment groups, each of 39 sheep. The treatments were: control, no mineral supplement; and treated, 25 g/head.day of SIROMIN given once weekly. The treatment commenced on 30 January, 1991, day 0 of the experiment. The 2 flocks of sheep were run separately and were rotated between paddocks on a weekly basis. Blood samples for biochemical assay and liver biopsies for trace element assays were taken from all sheep at the days given in Table 1. The results were subjected to a split plot analyses of repeat measures.

Table 1. Mean copper concentrations in plasma (umol/L) and liver (mmol/kg DM)
Mean values are for 39 sheep

Day:	Plasma Cu concentration				Liver Cu concentration		
	0	41	74	152	-22	41	152
Control	15.0	15.0	13.6	6.8	0.53	0.73	0.24
Treated	14.6	13.2	13.5	8.0	0.59	0.85	0.33
s.e.d. (treat. X time)			0.426			0.058	

Plasma and liver selenium concentrations indicated that all sheep in the Treated group were consuming the supplement. Treatment had no effect ($P > 0.05$) on the mean liveweight of the sheep. Table 1 gives the mean plasma and liver Cu values for each group. A significant time by treatment interaction ($P < 0.001$) was observed for plasma Cu concentrations. A significant effect of time ($P < 0.001$) and of treatment ($P < 0.05$) was observed for liver Cu values: the overall mean values for the Control and Treated groups were 0.50 and 0.59 mmol/kg DM respectively. Treatment had an inconsistent effect on mean plasma Cu concentrations at days 41 and 152 of the experiment (Table 1). At day 152 the mean liver Cu concentration for the Treated group was 0.33 mmol/kg DM: values above 0.4 mmol/kg DM are considered indicative of adequate liver Cu reserves (Judson et al. 1987). These findings suggest that SIROMIN may provide inadequate quantities of Cu to prevent Cu deficiency in sheep grazing pastures of high Mo content.

We are grateful to Mr G. E. Gleeson at Kybybolite Research Station for assistance and care of the animals.

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