

The Effect of Lasalocid on Wool Growth, Liveweight and Rumen Function

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Ionophores effect rumen fermentation by changing the pattern of volatile fatty acid (VFA) production in favour of propionate and away from acetate and butyrate. This results in an increased supply of energy to the animal and can lead to more efficient fermentative digestion and, under some conditions, higher growth rates (Wilkinson *et al* 1980). In addition, ionophores decrease the amount of dietary protein degraded in the rumen (Chalupa, 1984) and therefore, have the potential to improve the availability protein, and hence wool growth, in situations where dietary protein is extensively degraded in the rumen. Previously the ionophore lasalocid was found to have no effect on wool growth or liveweight change in sheep eating a low-protein diet, or in animals fed a high-protein diet at restricted level (Aitchison *et al* 1987). The principal objective of this present study was to examine the effect of lasalocid in animals fed a high protein diet at a level of intake which would allow a relatively high rate of liveweight gain and wool growth.

Thirty nine Merino ewes were housed individually and fed a pelleted diet based on lucerne chaff and lupins for 9 weeks. The ration was fed daily at a level calculated as 3.5% of the mean liveweight of the sheep at the start of the experimental period. Lasalocid was included at 4 levels (0, 30, 45 and 60 mg/kg feed). There were 9 sheep/treatment apart from the unmedicated control group where there were 12 sheep. Feed intakes were measured daily and animals weighed weekly. Wool growth was measured by clipping a midside patch during the experimental period. Rumen samples for ammonia and VFA analysis were taken by stomach tube during the last week of the experimental period.

Inclusion of lasalocid in the diet at 30 mg/kg significantly ($p < 0.05$) improved liveweight gain and feed conversion efficiency (138, 166, 154 g/d; 10.4, 8.43, 9.59, 9.09 kg feed/kg liveweight, for sheep fed diets containing lasalocid at 0, 30, 45 and 60 mg/kg respectively). Inclusion of lasalocid at the 2 highest levels reduced the concentration of rumen ammonia ($p < 0.01$) and at the lowest N/L; 129, 148, 122, 130 mmol/L, for sheep fed diets containing lasalocid at 0, 30, 45 and 60 mg/kg respectively). Wool growth, yield or mean fibre diameter were not influenced by inclusion of lasalocid in the diet.

Increased wool growth would be expected under conditions where there was an increase in the availability of amino acids to the animal. The data reviewed by Chalupa (1984) indicates that the ionophore antibiotics, in addition to reducing the amount of dietary protein degraded in the rumen, also decreases the amount of microbial protein synthesized in the rumen. The absence of a response in wool growth suggests that on the diet used here, there was no advantage in the additional dietary protein reaching the small intestine.

References

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