

EFFECT OF FLAVOMYCIN AND DIETARY PROTEIN ON WOOL GROWTH

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The feed additive flavomycin has been reported to increase wool growth in sheep fed a pelleted diet based on lucerne chaff and lupin grain (Aitchison et al. 1988). Subsequent experiments using a similar diet have given variable results and the reason for this is not clear. The quality of the protein in these diets may have differed for a number of reasons. For example the amount and rumen degradability of the protein or sulphur amino acids in the lucerne and lupins in the pellets may have been different in each experiment. The degradability of dietary protein in the rumen will have a direct effect on the amount and composition of amino acids and proteins available for absorption from the small intestine. In this experiment flavomycin was included at 4 levels (0, 10, 20, 40 ppm) in two diets of the same total dietary protein content (18%), but differing widely in the extent of protein degradability in the rumen. The aim of the experiment was to investigate the relative importance of dietary protein on the effectiveness of flavomycin to increase wool growth in sheep.

Sheep were fed either a pelleted diet consisting of wheat chaff: lucerne chaff: fishmeal: lupin grain (530:250:120:100) or a pelleted diet consisting of lucerne chaff: lupin grain: barley grain (600:250:150). For each of the two diets, nine Merino sheep were allocated to each treatment group, and 12 to each of the two control groups (no flavomycin). The experiment consisted of an initial period (eight weeks) during which all animals received their diet without flavomycin, followed by an experimental period (nine weeks) in which the animals received their diets with flavomycin. Animals were fed at 3.5% of the mean liveweight (32 kg; SE 0.3 kg) at the start of the covariate and experimental periods.

Animals were weighed weekly. Wool growth was measured by clipping a midside patch at the end of the initial and experimental periods. Rumen samples were taken by stomach tube during the last week of the experiment.

In sheep fed the lucerne chaff/lupins based pellet, flavomycin had no effect on liveweight change or wool production. In sheep fed the wheat chaff/fishmeal based pellet, flavomycin decreased the rate of liveweight gain ($P < 0.001$) (161, 151, 142, 130 g/d) and increased clean wool production ($P < 0.01$) (13.2, 14.6, 15.5, 15.4 g/m²/d; 0, 10, 20, 40 mg/kg feed respectively).

The inclusion of flavomycin in both diets increased the molar proportion of propionate in rumen fluid. Addition of flavomycin to the wheat chaff/fishmeal pellet reduced the concentration of rumen ammonia. The rate of wool growth by sheep fed both unmedicated diets was almost identical (13.2 vs 13.4 g/d). This indicated that the addition of flavomycin to the wheat chaff/fishmeal based pellet apparently increased wool growth where the appropriate sulphur amino acids were available for absorption from the small intestine.

AITCHISON, E. M., TANAKA, K., and ROWE, J. B. (1988). *Proc. Aust. Soc. Anim. Prod.*, 17: 373.

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