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Summary only

SOME ASPECTS OF FEEDING WHOLE WHEAT GRAIN
TO YOUNG SHEEP

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Three groups of three rumen-cannulated lambs were studied over three experimental periods — period I on chaffed lucerne (3 weeks), period II during transition from lucerne to whole wheat grain + 1½% limestone (4 weeks), period III whole wheat grain + 1½% limestone (10 weeks). Group A were controls, group B received 2% of a 1/1/1/1 mixture of NaHCO₃, NaHPO₄, KHCO₃ and CaHPO₄ during the wheat feeding periods, and group C received 1% Al(OH)₃.

One sheep in group A developed the typical wheat sickness symptoms in period III and one animal in group C died in period III. The remaining two animals in group C displayed extensive ulceration of the abomasal wall at slaughter at the end of period III.

During period III sheep in groups B and C consumed significantly more wheat dry matter and grew faster than animals in Group A. Analysis of rumen liquor indicated that sheep in groups B and C had significantly more micro-organisms and a lower proportion of Gram-positive organisms than sheep in group A during period III.

Differences were present between the groups for rumen pH values, particularly late in period III, with groups B and C having higher values than sheep in group A. No differences were present between the groups for concentration of VFA in the rumen liquor during the experiment. Concentration of lactic acid in the rumen liquor was similar between groups in period II but levels declined more rapidly with time in groups B and C than group A in period III. The molar ratios of acetic acid to propionic acid differed between groups particularly in the latter stages of period III with group A having a mean ratio of 1.8 whilst groups B and C had values of 1.0.

These data indicated that different microbial populations were present in the rumen of the three groups even though they were fed the same basic diet, and illustrates that it may be possible to modify the ruminal microbial population to maximize their outputs of fermentation products to allow maximum productivity of the host animal.