

**Effects of alkyl polyglycoside, a nonionic surfactant, and forage-to-concentrate ratio on rumen fermentation, amino acid composition of rumen content, bacteria and plasma in goats.**

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**Abstract**

In the present study, the effects of different forage-to-concentrate ratios (F:C) and an alkyl polyglycoside (APG) supplementation on parameters of rumen and blood metabolism were investigated in goats. A 2 x 2 factorial experiment was arranged within a 4 x 4 Latin square design (four 22-day periods), using four wether goats equipped with permanent ruminal cannulas. The experimental diets included two F:C levels (40:60 vs. 60:40), and two APG supplementation levels (None or 13 ml APG daily per animal). Rumen contents and blood samples were collected at the end of each period. Dietary F:C alteration affected plasma urea and influenced the proportions of leucine, histidine, arginine, glycine, proline, alanine, valine, phenylalanine, cysteine and tyrosine in rumen content, and the proportions of methionine, threonine and proline in solid-associated bacteria (SAB) significantly. Dietary APG decreased the proportions of valine and phenylalanine in rumen content, and the histidine content of liquid-associated bacteria. The interaction between dietary F:C and APG was significant for the proportions of glycine and alanine in rumen content, and the proportions of lysine and threonine in SAB. The proportion of lysine was greater, but the proportion of threonine was less in SAB for goats fed high F:C diet without APG supplementation. The proportions of plasma free amino acids and glucose concentration were not affected by experimental treatments. These results indicated that dietary APG addition affected the amino acid composition of the rumen content and ruminal bacteria, but this depended on the dietary F:C ratio. It is necessary to validate the effectiveness of dietary APG supplementation in further studies with more animals.