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Effect of folic acid and panthothenic acid supplementation on ruminal metabolism and nutrient flow at the duodenum

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Folic acid (FA) and pantothenic acid (PA) are both B-complex vitamins. The active form of FA plays an essential role in methionine and DNA metabolism. As a part of Coenzyme A and acyl carrier protein, PA is required in nearly every cell. It seems that FA and PA are the only B-vitamins for which microbial synthesis does not meet the estimated requirements. The objectives of the presented experiments were to study the influence of supplements of FA and PA on ruminal metabolism, with two diets differing in concentrate (C) to forage (F) ratio in cows fistulated at the rumen and the proximal duodenum. In the first experiment, a supplementation of 1 g FA per cow and day, and in the second experiment, a supplementation of 1 g PA per cow and day, were added to diets consisting either of ⅔ C and ⅓ F, or ⅓ C and ⅔ F. It seems that both vitamins have no influence on ruminal pH and NH_3 concentration and, only minor influences on some short chain fatty acids at both rations. FA at ⅓ C ration had no influence on fermented organic matter (FOM), apparent NDF digestibility, microbial protein synthesis, protein degradation and uCP. However, at ⅔ C-ration, FA tended to decrease the proportion of FOM to organic matter intake. Additionally, the amount of microbial protein arriving at the duodenum as well as the efficiency of the microbial protein synthesis significantly decreased due to FA at ⅔ C-ration. Thus, FA at ⅔ C-ration may result in less available energy for microbial protein synthesis. Apart from an increased FOM at ⅓ C-ration and a decreased microbial protein synthesis at ⅔ C-ration, no parameters were significantly influenced due to PA supplementation. Therefore, it seems that both vitamins had varying effects on ruminal metabolism at the different rations.

The effect of various mechanical processing on *in situ* degradation of sugar beet pulp

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The aim of this study was to evaluate the effect of the mechanical processing on *in situ* rumen dry matter (DM) degradation of sugar beet pulp (SBP). Samples were provided as unmolasses wet shred (UWS), molasses dried shred (MDS), molasses pelleted (MPL) and molasses blocked (MBL). Four rumen fistulated Holstein steers (400±12 kg, body weight) were used. Samples were milled (2-mm screen) and weighed (5 g, DM) into bags (12×19 cm) made of polyester cloth with 52 µm pore size (n=4). Bags were incubated in the rumen for 2, 4, 8, 16, 24, 48 and 72 h. A part of bags was washed with cold tap water to estimate the wash-out at zero time. After each rumen incubation, bags were hand-washed, then, dried in a forced-air oven (60 ˚C, 48 h). The degradable parameters of DM were determined using the equation of $P = a + b (1 - e^{-ct})$; P: potential degradability, a: rapidly degradable fraction, b: slowly degradable fraction, c: fractional degradation rate constant (h^{-1}). Results showed that the *in situ* degradation parameters of DM of SBP were influenced by the processing ($P<0.05$). The fraction of (a) was the highest for MBL sample (UWS = 0.03±0.02, MPL = 0.41±0.02, MDS = 0.42±0.02 and MBL = 0.58±0.01). While, slowly degradable fraction of UWS was higher than the others (UWS = 0.97±0.03, MPL = 0.54±0.02, MDS = 0.54±0.03 and MBL = 0.39±0.02). Molasses blocked and MPL had the highest fraction of (c) of DM ($P<0.05$) compared with MDS and UWS (0.080±0.011, 0.071±0.008, 0.055±0.009 and 0.052±0.009, respectively).