Effect of lactulose on growth performance and intestinal morphology of pre-ruminant calves using a milk replacer containing Enterococcus faecium

Abstract:

The synthetic disaccharide lactulose is known to improve the intestinal microflora by stimulating the growth of selected probiotic bacteria in the gut. In our experiment the effects of lactulose in combination with the probiotic bacteria Enterococcus faecium on growth performance and morphology of the bovine intestine were examined. Calves aged 39 ± 2 days were randomised to three feeding groups (no. = 14 each group): control (L0), fed milk replacer (MR) containing E. faecium; a lactulose group (L1) contain additional 1% lactulose and a second lactulose group (L3) containing 3% lactulose dry matter. The calves were weighed weekly. After 19 weeks the calves were slaughtered and tissues were collected for histological studies. The average daily live weight gain tended to be higher (P <0.1) for L3 (1350 g/day) than L0 (1288 g/day). Compared with L0, a reduction (P <0.001) of ileal villus height due to lactulose treatment of approximately 14% in group L1 and 20% in L3 was determined. A significant decrease in the depth of the crypts about 12% in L1 and 8% in L3 was detected in the caecum. The surface area of lymph follicles from Peyer’s patches was decreased by lactulose treatment. Results show that lactulose has an effect on the morphology of intestine. A significant effect on growth performance can not be confirmed. However, results permit the
conclusion that lactulose feeding has the tendency to increase growth performance.

Stichworte: calves, growth, lactulose, probiotics, villi

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