EFFECT OF INTRARUMINALLY AND INTRADUODENALLY INFUSED SHORT-CHAIN FATTY ACIDS (SCFA) ON PANCREATIC JUICE OUTFLOW IN SHEEP

Vaida Šileikienė[1], Rainer Mosenthin[1], Danuta Kruszewska[2], Barbara Krasicka[3] and Stefan G. Pierzynowski[4, 5]

[1] *Institute of Animal Nutrition, University of Hohenheim, D-70593 Stuttgart, Germany,*
Phone: +497114593938, Fax: +497114592421,
E-mail: sileikie@uni-hohenheim.de; rhmosent@uni-hohenheim.de
[2] *Department of Medical Microbiology, Dermatology and Infection, Lund University, SE-22362 Lund, Sweden*
[3] *Department of Animal Physiology, Warsawa Agricultural University*
Nowoursynowska 166, 02-787 Warsaw, Poland
[4] *Department of Cell and Organism Biology, Lund University, SE-2232 62 Lund, Sweden*
[5] *Sea Fisheries Institute, 82-332 Gdynia, Poland*

Abstract. The effect of intraduodenal and intraruminal infusion of short-chain fatty acids (SCFA) on exocrine pancreatic secretions was studied in 27 Polish Merino sheep that were surgically fitted with a common bile duct catheter, a gall-bladder catheter and two duodenal T-cannulas for collection and subsequent return of pancreatic juice, and with a ruminal cannula. Animals were fed *ad libitum* with silage and grass hay. Saline solution as a control or SCFA adjusted to pH 7.0 or 1.5 were either infused into the duodenum or rumen to overnight fasted sheep. Pancreatic juice was collected 1 h before and 7 h after the infusion had started. The pH value of pancreatic juice was measured immediately after the collection. Intraduodenal or intraruminal infusion of saline had no affect on the pancreatic juice outflow. No differences in the pancreatic juice outflow were obtained after intraruminal infusion of SCFA in comparison to saline infusion. However, a tendency to a decreased juice outflow was observed after intraruminal infusion of saline and neutralized SCFA (pH 7.0). The intraduodenal infusion of SCFA at pH 7.0 and pH 1.5 in comparison to saline resulted in a decreased pancreatic juice outflow. This effect was more pronounced when neutralized SCFA were infused. The results suggest that SCFA may affect pancreatic juice outflow both *via* pH dependent and pH independent mechanisms located in the mucosa of the proximal small intestine.

Keywords: short-chain fatty acids (SCFA), sheep, pancreatic secretion, rumen, duodenum.