



## Component digestibility of lupin (*Lupinus angustifolius*) and pea (*Pisum sativum*) seeds and effects on the small intestine and body organs in anastomosed and intact growing pigs

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### Abstract

Thirty-six male growing pigs were used to compare the component digestibility of legume seeds and the impact of diets and ileo-rectal anastomosis (IRA) on the morphology and enzyme activities of intestinal mucosa. The pigs were fed a control (C) diet based on casein or a diet in which 60% of crude protein (CP) was supplied by blue lupin (*Lupinus angustifolius*) (L) or pea (*Pisum sativum*) (P) seeds. Coefficient of total tract apparent digestibility (CTTAD) of organic matter (OM), CP and gross energy (GE) was lower in the L diet compared to the control diet. The pea-based diet presented intermediate CTTAD values of OM and GE. Coefficient of ileal apparent digestibility (CIAD) of OM and GE was lower in the legume-containing diets than with C. No significant differences were found for the CIAD of CP. There was a significant interaction between diet and IRA for villus height in the jejunum and crypt width in the ileum. Duodenal and jejunal crypt width was lower in the pigs fed the legume-containing diets compared to controls. The diet influenced the specific activity of most intestinal enzymes at various sites along the small intestine. Anastomosed pigs had higher spleen and small intestine weights and lower large intestine weights as compared to intact pigs. IRA influenced intestinal villus and crypt architecture but it had no significant effect on the activities of intestinal enzymes. © 2002 Elsevier Science B.V. All rights reserved.

**Keywords:** Pigs; Legume-containing diets; Ileo-rectal anastomosis; Digestibility; Gut morphology; Intestinal enzymes

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