

The Source of Fibre and Roxazyme® G2 Interacted to Influence the Length of Villi in the Ileal Epithelium of Growing Pigs Fed Fibrous Maize-Soybean Diets

Authors : F. Fushai, M. Tekere, M. Masafu, F. Siebrits, A. Kanengoni, F. Nherera

Abstract : The effects of dietary fibre source on the histomorphology of the ileal epithelium were examined in growing pigs fed high fibre (242-250 g total dietary fibre kg⁻¹ dry matter) diets fortified with Roxazyme® G2. The control was a standard, low fibre (141 g total dietary fibre kg⁻¹ dry matter) diet formulated from dehulled soybean (*Glycine max*), maize (*Zea Mays*) meal and hominy chop. Five fibrous diets were evaluated in which fibre was increased by partial substitution of the grains in the control diet with maize cobs, soybean hulls, barley (*Hordeum vulgare* L) brewer's grains, Lucerne (*Medicago sativa*) hay or wheat (*Triticum aestivum*) bran. Each diet was duplicated and 220 mg Roxazyme® G2 kg⁻¹ dry matter was added to one of the mixtures. Seventy-two intact Large White X Landrace male pigs of weight 32 ± 5.6 kg pigs were randomly allocated to the diets in a complete randomised design with a 2 (fibre source) X (enzyme) factorial arrangement of treatments. The pigs were fed ad libitum for 10 weeks. Ileal tissue samples were taken at slaughter, at a point 50cm above the ileal-caecal valve. Villi length and area, and crypt depth were measured by computerised image analyses. The villi length: crypt ratio was calculated. The diet and the supplemental enzyme cocktail did not affect ($p > 0.05$) any of the measured parameters. Significant ($p = 0.016$) diet X enzyme interaction was observed for villi length whereby the enzyme reduced the villi length of pigs on the soy-hulls, standard and wheat bran diets, with an opposite effect on pigs on the maize cob, brewer's grain, Lucerne diets. The results suggested fibre-source dependent changes in the morphology of the ileal epithelium of pigs fed high fibre, maize-soybean diets fortified with Roxazyme® G2.

Keywords : fibre, growing pigs, histomorphology, ileum, Roxazyme® G2

Conference Title : ICASVM 2015 : International Conference on Animal Science and Veterinary Medicine

Conference Location : Sydney, Australia

Conference Dates : December 10-11, 2015