

## Nonruminant Nutrition: Enzymes and processing

### 113 Comparative efficacy of xylanases on energy and nutrient digestibility in growing pigs fed corn- or wheat-based diets.

Elijah Kiarie\*<sup>1,2</sup>, Luis F. Romero<sup>1</sup>, Susan Arent<sup>3</sup>, Rikke Lorentsen<sup>3</sup>, and Hans H. Stein<sup>4</sup>, <sup>1</sup>DuPont Industrial Biosciences-Danisco Animal Nutrition, Marlborough, Wiltshire, UK, <sup>2</sup>Department of Animal Science, University of Manitoba, Winnipeg, MB, Canada, <sup>3</sup>DuPont Nutrition Biosciences—Enzyme Research & Development, Brabrand, Arhus, Denmark, <sup>4</sup>Department of Animal Sciences, University of Illinois, Urbana, IL.

Microbial xylanases differ with respect to source, substrate specificities, and biochemical characteristics, but these differences are rarely considered in their evaluation for animal feed applications. Therefore, an experiment was conducted to determine effects of 5 xylanases on apparent ileal (AID) and apparent total-tract digestibility (ATTD) of energy and nutrients in growing pigs fed diets based on corn plus 40% corn distillers dried grains with solubles (DDGS) or wheat plus 25% wheat co-products. The 5 xylanases (XA, XB, XC, XD and XE) were mono-component preparations of endo-1,4- $\beta$ -xylanase produced by different fungal organisms except XC, which was of bacterial origin. Xylanases were fed at 75 mg of xylanase protein/kg of feed. All diets also contained microbial phytase (500 units/kg). All xylanases and phytase were provided by Danisco Animal Nutrition, Marlborough, Wiltshire, UK. Twelve ileal cannulated barrows (29.3 kg BW) were allotted to two 6  $\times$  6 Latin squares with 6 corn-based and 6 wheat-based diets in each square. Corn and wheat diets had similar levels of insoluble (11.6 vs. 11.0%) non-starch polysaccharides (NSP), but corn diets contained less soluble NSP (1.3 vs. 1.9%) and starch (31.1 vs. 39.0%) than wheat diets. Corn diets containing XD or XE had greater ( $P < 0.05$ ) AID of GE (68.5%) than the control diet (64.6%) or diets containing XB (64.3%) or XC (64.3%), whereas in wheat diets, the diet containing XE had lower ( $P < 0.05$ ) AID of GE (67.9%) compared with diets containing XA, XC, and XD that all had an AID of 72.8% (interaction,  $P < 0.05$ ). Wheat based diets had greater ( $P < 0.05$ ) AID of GE and nutrients compared with corn diets. There was no main effect of diet and no interactions between xylanase and diet for ATTD of GE, but diets containing XE or XD had greater ( $P < 0.05$ ) ATTD of GE compared with the control diets and diets containing XC, whereas results for diets containing XA and XB were intermediate. These data indicate that not all xylanase sources are similar in efficacy at the pig gut level, which may be a result of the unique characteristics of each xylanase.

**Key Words:** digestibility, xylanase, pig