

ANIMAL SCIENCE

Title: Maximizing the utilization of lower energy, higher fiber feedstuffs through more focused and effective use of xylanase – **NPB #14-234**

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Scientific Abstract: Previous experiments with xylanase in swine have produced inconsistent and non-repeatable results. The objective of this experiment was to develop and understanding of the mode of action of the xylanase enzyme when used in diets based on corn fiber. Thirty-two gilts surgically fitted with t-cannula at the terminal ileum were randomly allotted to one of four dietary treatments, which they remained on for the duration of the trial. Diets were arranged in a 2×2 factorial, with fiber level being the first factor (corn-SBM or corn-SBM-30% DDGS) and xylanase being the second factor (0% or 0.017%). The trial consisted of three 5-day collections (d 8 to 12, d18 to 22, d 38 to 42), each of which included a 2-day fecal collection followed by a 3-day ileal collection. Chromic oxide was included in the diets as an indigestible marker. Data were analyzed using PROC MIXED with pig as the experimental unit, collection time as a repeated measure, and fiber level and xylanase inclusion as fixed effects. Xylanase inclusion tended to increase GE and DM digestibility in the small intestine in low fiber diets ($P = 0.058$, $P = 0.099$) but had no effect on energy digestibility in high fiber diets. Xylanase inclusion decreased NDF and ADF digestibility in the small intestine in low fiber diets ($P = 0.008$, $P = 0.001$), and decreased hemicellulose digestibility in the small intestine regardless of dietary fiber level ($P = 0.020$). Inclusion of xylanase increased ADF digestibility in the large intestine, regardless of dietary fiber level ($P = 0.106$). The pattern of energy and ADF digestibility over time was altered by the inclusion of xylanase. Although the non-xylanase and xylanase treatments were not different from one another at each of the three time points, non-xylanase treatments had significant increases in GE digestibility from d 10 to 20, followed by no significant increase from d 20 to 40, whereas treatments containing xylanase had no change in digestibility from d 10 to 20, but significant changes in ADF and GE digestibility from d 20 to 40. Xylanase appears to be more effective in low fiber diets and after some amount of time on the enzyme.

These research results were submitted in fulfillment of checkoff-funded research projects. This report is published directly as submitted by the project's principal investigator. This report has not been peer-reviewed.

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