

Xylanase and a stimbiotic increased growth performance and total tract digestibility of nutrients in diets for weanling pigs, but feeding sows xylanase in lactation did not influence pig growth performance after weaning.

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Abstract

The hypothesis that xylanase or a stimbiotic (i.e., xylanase in combination with xylo-oligosaccharides), improve growth performance and the apparent total tract digestibility (ATTD) of gross energy (GE) and total dietary fiber (TDF), and the concentration of digestible energy (DE) of diets for weanling pigs was tested in a 6-wk experiment. The second hypothesis was that the effect is greater in offspring of sows fed xylanase in lactation than in offspring of sows fed no xylanase during lactation. A total of 120 newly weaned pigs from sows fed a lactation diet without xylanase and 120 pigs from sows fed a lactation diet containing 16,000 beechwood xylanase units (BXU) per kg of an exogenous xylanase were used (initial body weight: 5.81 ± 0.50 kg). Pigs were allotted to a 2×3 factorial with two sow groups (lactation diet without or with xylanase) and three dietary treatments (i.e., control, control plus 100 g/t of xylanase, or control plus 100 g/t of stimbiotic). The xylanase (Econase XT) and the stimbiotic (Signis) were procured from AB Vista, Marlborough, UK. Pigs were weaned in 4 blocks and allotted to 12 pens per block, with 5 pigs per pen for a total of 8 replicate pens per treatment. Pigs were fed experimental diets during phase 1 (d 0 to 14 postweaning), phase 2 (d 15 to 28), and phase 3 (d 29 to 42). Average daily gain (ADG), average daily feed intake (ADFI), and gain:feed (G:F) were calculated. Fecal samples were collected at the end of phases 2 and 3. Data were analyzed using the MIXED procedure of SAS with pen as the experimental unit. Sow group, diet treatment, and the interaction between sow group and diet were fixed effects, and block and replicate within block were random effects. Results indicated that for the overall experiment, there were no interactions between sow group and diet, and there were no effects on offspring of sows due to lactation diet treatment. In phase 2, the ADG, G:F, ATTD of GE and TDF, and concentration of DE were greater ($P < 0.05$) for pigs fed the diet with stimbiotic than pigs fed the xylanase diet or the control diet, and pigs fed the xylanase diet had greater ($P < 0.05$) ADG, G:F, ATTD of GE and TDF, and concentration of DE than pigs fed the control diet. In phase 3, pigs fed diets with xylanase or the stimbiotic had greater ($P < 0.05$) ADG, ATTD of GE and TDF, and concentration of DE than pigs fed the control diet. In conclusion, pigs fed diets containing xylanase or the stimbiotic had greater nutrient digestibility, resulting in greater growth performance and greater body weight on d 42 postweaning, but feeding sows xylanase in lactation did not influence pig growth performance.