conditions. A sample (10mL) of small intestine effluents was freeze dried and subjected to analysis of non-starch polysaccharides (NSP). There was no interaction ($P > 0.05$) between xylanase and diet type on the ratio of soluble to insoluble AX (RAX) and soluble to insoluble NSP (RNSP). The main effects were such that wheat diets had a higher ratio of RAX than corn diets (36.8 vs. 18.9%; $P = 0.001$). Xylanase increased RAX (32.4 vs. 22.4%; $P = 0.03$) and RNSP (75.1 vs. 52.6%; $P = 0.03$). In study 2, ileal digesta samples obtained from growing pigs (32.4 kg BW) fed 96% corn ($n = 5$) or wheat ($n = 5$) DDGS based diets (with 1.5% glycerol and 1% calcium carbonate) for 7 d were used to test dose response of xylanase on the release of soluble AX. Statistical analysis for both studies was conducted using the GLM procedure of SAS. The total NSP and AX concentrations in corn DDGs ileal samples were 378 and 174 g/kg, respectively and the corresponding values in wheat DDGS ileal digesta were 291 and 117 g/kg. The samples were subjected to a 2 (corn or wheat DDGS) × 3 (0, 2000 or 20,000 XU/kg) factorial design in vitro incubation experiment. Briefly, 100mg of sample was mixed with buffer (pH = 6) with or without xylanase and incubated for 2 h in a microplate shaker (1140 rpm) at 40°C. The solution was then centrifuged at 3000 rpm, 20°C for 10 min and the supernatant submitted for soluble AX analysis. There was no interaction ($P = 0.357$) between DDGS type and xylanase on the concentration of soluble AX. The main effects of the diet ($P < 0.01$) were such that wheat DDGS samples had twice the concentration of soluble AX relative to corn DDGS. Xylanase ($P < 0.01$) increased the release of soluble AX in a linear manner. Specifically, the concentration of soluble AX was 5027, 5919 and 6968 µg/mL in the control, 2000 and 20,000 XU, respectively. Our results illustrate clearly that supplemental xylanase solubilized AX independent of cereal source in the diet and in the digesta matrices.

Key Words: xylanase, cereal arabinoxylans, solubilization

236 Evaluating the efficacy of a novel phytase source.

J. R. Flohr*, J. M. DeRouchey, M. D. Tokach, S. S. Dritz, J. C. Woodworth, R. D. Goodband, *Kansas State University, Manhattan.*

A total of 350 nursery pigs (PIC 1050 barrows, initially 15.1 kg BW) were used in a 21-d study to determine the available phosphorus (aP) release curve for a novel phytase product (Microtech 5000, VTR Bio-tech Co., Guangdong, China). Pigs were randomly allotted to pens at arrival to facilities and on d 0 of the trial pens were allotted to 1 of 7 treatments in a randomized complete block design. There were 5 pigs per pen and 10 pens per treatment. Pigs were fed corn-soybean meal-based diets formulated to contain 1.25% SID Lys. Experimental treatments consisted of 3 diets formulated to 0.12, 0.18, and 0.24% aP with the only source of added P being an inorganic source (monocalcium P). Then, phytase was added to the diet formulated to 0.12% aP at 4 levels (250, 500, 750, and 1000 FTU/kg). Diets were analyzed for phytase using the AOAC method, and analyzed concentrations were lower than formulated. Diets formulated to contain 250, 500, 750, and 1000 FTU/kg had analyzed concentrations of 155, 335, 465, and 780 FTU/kg, respectively. On d 21, one pig per pen was euthanized and fibulas were collected to determine bone ash weight and percentage bone ash. From d 0 to 21, increasing P from inorganic P or increasing phytase increased ADG (linear, $P < 0.01$), G:F (linear, $P < 0.01$ for inorganic P; quadratic, $P < 0.03$ for phytase), and final BW (linear, $P < 0.01$). Bone ash weight and percentage were increased (linear, $P < 0.01$) with increasing inorganic P and increasing phytase. Response criteria, which remained in the linear portion of the quadratic phytase curve (ADG, bone ash weight, and percentage bone ash), were used to calculate aP release curves. When analyzed phytase values and percentage bone ash are used as the predictor variables, aP release percentage for up to 780 FTU/kg of Microtech 5000 phytase can be predicted by the equation ($y = 0.000002766761x – 0.000000002225x^2 – 0.000201841391$; $r^2 = 0.948$), where x is the phytase concentration in the diet (FTU/kg).

Key Words: nursery pig, phosphorus, phytase

Table 236.

	Monocalcium P, % aP			Phytase, FTU/kg (analyzed)				
	0.12	0.18	0.24	155	335	465	780	SEM
ADG, kg	0.55	0.67	0.73	0.59	0.60	0.59	0.63	0.023
ADFI, kg	1.12	1.12	1.20	1.12	1.09	1.09	1.13	0.054
G:F	0.496	0.593	0.607	0.528	0.554	0.543	0.553	0.0116
Bone ash, g	1.17	1.40	1.66	1.14	1.27	1.22	1.38	0.083
Bone ash, %	33.50	36.20	39.23	32.81	35.02	35.2	36.04	1.892

237 Effect of combined xylanase and phytase supplementation on growth performance, carcass characteristics, and apparent total tract digestibility in pigs fed corn-based diets containing multiple by-products.

Y. D. Jang*[1], P. Wilcock[2], R. D. Boyd[3], M. D. Lindemann[1], *[1]University of Kentucky, Lexington, KY, [2]AB Vista Feed Ingredients, Marlborough, United Kingdom, [3]The Hanor Company, Inc., Franklin, KY.*

Phytate has been shown to be an anti-nutrient and that feeding high levels of phytase can breakdown phytate improving nutrient utilization and pig performance. Dietary xylanase targets arabinoxylan breakdown improving energy utilization in pigs. However, the individual effects of simultaneous supplementation have not been clearly determined. Crossbred pigs ($n = 45$; mean initial weight: 26.4 kg) were allotted to 9 treatments to evaluate the effect of both xylanase (Econase XT; endo-1,4-β xylanase [EC 3.2.1.8]) and phytase (Quantum Blue) supplementation as follows: 1) positive control [PC]: a corn-SBM based diet with 15% each of corn distillers dried grains with