

Table 1. Growth performance and fecal PCR analysis.¹

TRT	1	2	3	4	5	6	SEM	P <
d 0 BW, kg	5.5	5.5	5.5	5.5	5.5	5.5	0.03	1.0
ADG, g	387	405	408	404	402	423	11.73	0.47
ADFI, g	436	441	443	437	439	459	13.45	0.85
G:F	0.89 ^b	0.92 ^a	0.92 ^a	0.93 ^a	0.92 ^a	0.92 ^a	0.009	0.05
d 22 BW, kg	14.2	14.6	14.7	14.6	14.6	15.0	0.27	0.50
Fecal bacteria ²								
d 8								
BB	1	2.20	1.24	2.08	0.81	1.01	.0012	0.80
LB	1	3.31	1.07	2.14	2.79	1.44	.0004	0.78
d 15								
BB	1 ^b	1.23 ^b	3.61 ^{ab}	2.91 ^{ab}	1.39 ^b	10.05 ^a	.0018	0.02
LB	1 ^b	0.77 ^b	0.69 ^b	2.27 ^{ab}	1.20 ^b	4.93 ^a	.0001	0.01

¹ab Within a row, means without common superscript differ (P < 0.05).²Means expressed as fold change vs. TRT 1.**Key Words:** lactobacillus, nursery, pigs

P056 The interactive effects of a non-starch polysaccharide enzyme and phytase in diets with high-fiber co-products on growth performance of nursery pigs. A. B. Graham^{*}, J. M. DeRouchey, M. D. Tokach, R. D. Goodband, S. S. Dritz, S. Nitikanhanchana, J. L. Nelssen, Kansas State University, Manhattan.

Two experiments were conducted to determine the effects of a dietary non-starch polysaccharide enzyme (NSP; Easzyzyme, ADM, Decatur, IL) and/or phytase (Phyzyme, Danisco Animal Nutrition, St. Louis, MO) addition in corn-soybean meal or high-fiber diets on nursery pig performance. In Exp. 1, 192 pigs (9.9 kg BW) were allotted to 1 of 4 dietary treatments arranged in a 2×2 factorial. Main effects were diet type (corn-soybean meal; CS, or corn-soybean meal plus 30% wheat middlings; CSM) with or without 0.05% NSP enzyme. From d 0 to 21, pigs fed CS diets had greater (P<0.001) ADG than those fed CSM diets (546 vs. 503 g/d). Added NSP enzyme had no effect on ADG (525 vs. 525 g/d). In CS diets, NSP enzyme had no effect on ADFI or G:F, whereas in CSM diets, NSP enzyme increased ADFI and decreased G:F (interaction P<0.03). In Exp. 2 (see table), 350 pigs (11.6 kg BW) were allotted to 1 of 7 dietary treatments arranged in a 2×3 factorial plus control. Pigs were fed either a CS diet with no NSP enzyme or phytase or 1 of 6 diets containing 10% wheat midds, 10% hominy, and 10% corn germ meal with or without NSP enzyme and 0, 500, or 1,200 FTU/kg phytase. Available P was formulated to the pig's requirement before adding phytase to determine if phytase affected the digestibility of other nutrients that might enhance growth performance. Pigs fed the CS diet had greater ADG, and G:F than pigs fed co-product-based diets. Added NSP enzyme had no effect on ADG and ADFI, but decreased G:F. Increasing phytase had no effect on ADG, ADFI, or G:F. These results suggest that adding high-fiber co-products to diets decreased ADG and G:F compared with CS diets. Added NSP enzyme or high concentrations of phytase in diets adequate in P had no positive effects on growth performance.

Exp. 2

	Corn-soy diet		Co-product diet				SEM
	-	+	-	+	-	+	
NSP enzyme:	-	-	+	-	+	-	+
Phytase, FTU/kg	-	-	-	500	500	1200	1200
d 0 to 21							
ADG, g ^a	553	512	509	499	504	529	497
ADFI, g	867	849	859	817	863	841	846
G:F ^{ab}	0.64	0.60	0.59	0.61	0.59	0.63	0.59

^a Diet type: P < 0.01.^b NSP enzyme: P < 0.01.**Key Words:** co-products, enzyme, phytase

P057 Effect of xylanase supplementation both with and without phytase on apparent total tract digestibility (ATTD) in growing and finishing pigs. Y. D. Jang^{1,*}, M. D. Lindemann¹, R. A. Cabrera², ¹Animal and Food Sciences, University of Kentucky, Lexington, ²Huvepharma, Inc., Peachtree City, GA.

The effect of xylanase supplementation both with and without phytase in diets was evaluated for growing and finishing pigs. A total of 16 barrows were allotted to 4 treatments in 4 replicates for Group 1 (initial BW: 41.7 ± 8.7 kg) and this process was repeated for Group 2 (initial BW: 86.5 ± 10.3 kg). Dietary treatments supplemented xylanase (Hostazym X, 15,000 EPU/g; Huvepharma, Inc. Peachtree City, GA) and phytase (Optiphos, 2000 FTU/g; JBS United, Inc. Sheridan, IN) as follow: 1) positive control [PC]: corn-SBM based diet, 2) negative control [NC; ME was reduced by 79 and 100 kcal/kg from the PC diet for Groups 1 and 2, respectively], 3) NXP: NC + xylanase [1,500 EPU/kg diet] + phytase [800 FTU/kg diet], and 4) NX: NC + xylanase [1,500 EPU/kg diet]. A 5-d fecal collection was performed after a 7 d adaptation period for determining ATTD. The ATTDs of Groups 1 and 2 were pooled to calculate mean ATTD. The highest ATTDs of dry matter (87.09, 84.82, 85.55, and 85.84%, P<0.05), gross energy (86.58, 84.24, 84.96, and 85.08%, P<0.01), ether extract (EE; 86.74, 76.74, 82.89, and 77.94%, P<0.01), acid detergent fiber (ADF; 68.60, 58.38, 60.86, and 63.59%, P<0.01), neutral detergent fiber (NDF; 73.67, 62.58, 65.18, and 68.32%, P<0.01), and hemicellulose (75.47, 63.84, 66.31, and 69.76%, P<0.01) were observed in PC group. The phytase and xylanase supplementation (NXP) showed the highest ATTD of P among treatments (47.41, 43.87, 53.06, and 43.28%, P<0.01) and the increased ATTD of EE compared with NC and NX groups (76.74, 82.89, and 77.94% for NC, NXP and NX, respectively, P<0.01). In contrast between NC and NX groups, the single supplementation of xylanase (NX) increased ATTDs of ADF (58.38 and 63.59%, P=0.051), NDF (62.58, and 68.32%, P=0.052) and hemicellulose (63.84, and 69.76%, P=0.055). This experiment demonstrated that the phytase and xylanase supplementation improved ATTDs of P and EE whereas the improvements in ATTD of fibrous components were observed in the diet supplemented with xylanase only for pigs.

Key Words: phytase, xylanase, pigs, apparent total tract digestibility

P058 Effect of supplemental xylanase on apparent digestibility and blood parameters in growing pigs fed wheat/wheat bran or corn/corn DDGS based diets. J. M. Heo^{1,*}, E. Kiarie², A. K. Agyekum¹, M. Nyachoti¹, ¹Animal Science Department, University of Manitoba, Winnipeg, Canada, ²DuPont Industrial Biosciences-Danisco Animal Nutrition, Marlborough, Wiltshire, United Kingdom.

The effect of xylanase on apparent digestibility and blood profiles was tested in growing pigs. Four diets in a 2 (diet type; wheat/wheat bran or corn/corn DDGS) × 2 (xylanase; with 2000 U/kg of feed or without) factorial arrangement were fed to 4 ileal cannulated barrows (28.2 ± 0.92 BW) in a 4 × 4 Latin Square design with 2 added columns (n = 6). All diets contained supplemental microbial phytase (500 FTU/kg) and TiO₂ (3 g/kg) as indigestible marker. Enzymes were provided by Danisco UK Ltd. Pigs were fed their respective diets in two equal portions at 0830 and 1630. Daily feed allowance was based on the BW at the beginning of each period and was calculated to supply 2.6 times the estimated maintenance requirements. Each period lasted for 12 d. Pigs were adapted to experimental diets for 7 d. On d 8 and 9, grab fecal samples were collected and on d 10 and 11, ileal digesta was collected continuously from each pig from 0800 to 2000 daily for digestibility measurements. Blood samples