Table 283.

	93% SID Lys					100% SID Lys		
	13.50%	16%	18.50%	21%	23.50%	18.50%	Linear	Quadratic
Phase 1 ADG, kg/d	0.64	0.70	0.71	0.73	0.72	0.59	<0.01	0.04
Phase 3 ADG, kg/d	0.65	0.72	0.74	0.75	0.70	0.80	0.26	0.07
Phase 5 ADG, kg/d	0.90	1.07	1.12	1.08	1.09	1.08	<0.01	<0.01
Phase 1 ADFI, kg/d	1.29	1.40	1.50	1.59	1.38	1.44	0.16	0.04
Phase 3 ADFI, kg/d	2.27	2.68	2.65	2.77	2.60	2.72	0.08	0.05
Phase 5 ADFI, kg/d	3.08	3.52	3.31	3.47	3.30	3.35	0.36	0.09
Phase 5 G:F	0.29	0.31	0.33	0.31	0.33	0.32	<0.01	0.41
End of phase 1 BW, kg	37.76	39.09	39.25	39.73	39.48	36.67	<0.01	0.04
End of phase 3 BW, kg	84.70	86.23	86.93	87.10	85.97	88.79	0.20	0.07
End of phase 5 BW, kg	134.50	140.21	141.39	139.89	139.87	141.70	0.02	0.01
HCW, kg	220.63	229.44	229.27	229.00	229.07	231.07	0.03	0.05
Lean, %	53.24	53.49	53.02	53.59	53.35	53.31	0.76	0.96
10th-rib fat depth, mm	21.44	22.08	22.18	21.10	20.93	22.83	0.50	0.43

285 Effects of prebiotic or organic acid supplementation on growth performance, nutrient digestibility, and plasma cytokines of weaned pigs housed under poor sanitary conditions. B. V. Le Thanh[1,*], J. K. Htoo[2], L. F. Wang[3], R. T. Zijlstra[1], *[1]Department of Agricultural, Food and Nutritional Science, University of Alberta, Edmonton, AB, Canada, [2]Evonik Nutrition & Care GmbH, Hanau-Wolfgang, Germany, [3]University of Alberta, Edmonton, AB, Canada*.

Weaning causes changes in intestinal functions that may induce postweaning diarrhea (PWD) in newly weaned pigs. Dietary supplementation of feed additives such as prebiotics or organic acids may reduce PWD and was evaluated in 160 pigs (7.6 ± 0.9 kg BW) that were weaned at 20 d of age and housed in pens with 4 pigs. Pigs were housed under poor sanitary conditions created by spreading pooled feces from the sow herd in pens 1 d before and 1 wk after pigs were placed into pens that were not cleaned prior to or during the entire study. Diets were formulated without antibiotics and growth promoters to provide 2.42 Mcal NE/kg, 5.18 g standardized ileal digestible (SID) Lys/Mcal NE, and 21.7% CP. One week after weaning, pens blocked by areas in rooms were randomly assigned for 3 wk to 5 test diets: 1 basal diet (negative control) containing corn, wheat, canola meal, and soybean meal and 4 test diets formulated by adding 1 of the following feed additives to the basal diet: β-glucan + Zn (0.02 and 0.05%), 0.25% mannan oligosaccharides (MOS), and 1.20% potassium diformate (HCO_2K [KdiF]). Data were analyzed as a randomized complete block using the mixed procedure with test diet as the fixed term and block as the random term. Following the trial start, PWD (measured as % d within wk of diarrhea incidence) increased ($P < 0.001$; time effect) and then declined (23, 52, and 28% for wk 1, 2, and 3, respectively) but did not differ among diets. Supplementation of KdiF increased ($P < 0.05$) ADG by 13%, final BW by 8.5%, apparent total tract digestibility (ATTD) of DM, CP, and GE by 3%, and predicted dietary NE value by 4% compared with the control. Supplementation of β-glucan + Zn tended to increase ($P < 0.10$) G:F by 11% during wk 1 and increased ($P < 0.05$) ATTD of DM, CP, and GE by 3% and predicted dietary NE value by 3% compared with the control. Supplementation of MOS did not affect performance, ATTD of nutrients, or predicted dietary NE value. Supplementation of β-glucan + Zn, MOS, and KdiF did not affect plasma IFN-γ and IL-1β. In conclusion, KdiF enhanced growth performance and nutrient digestibility, β-glucan + Zn enhanced nutrient digestibility but did not affect growth, and MOS did not affect any variable. Although not affecting PWD in weaned pigs housed under poor sanitary conditions, dietary supplementation of organic acid increased nutrient digestion and enhanced growth whereas dietary prebiotics did not.

Key Words: digestibility, feed additives, postweaning diarrhea
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286 Effects of a yeast-based feed additive on nursery pig performance. H. E. Williams[1,*], J. C. Woodworth[1], J. M. DeRouchey[1], S. S. Dritz[1], M. D. Tokach[1], R. E. Musser[2], R. D. Goodband[1], *[1]Kansas State University, Manhattan, [2]NUTRIQUEST, Mason City, IA*,

A total of 360 pigs (PIC C-29 × 359; initially 6.22 ± 0.008 kg BW) were used in a 42-d growth trial evaluating the effects of Evosure (NUTRIQUEST, Inc., Mason City, IA) on nursery pig performance. Evosure is a yeast-based additive to enhance weaned pig performance. Pigs were weaned at approximately 16 to 20 d of age and allotted with 10 pigs/pen and 12 replications/treatment based on initial BW and gender in a completely randomized design. The 3 dietary treatments included 1) a control diet, 2) the control diet with Evosure fed at 0.05% from d 0 to 21 followed by 0.025% from d 21 to 42, or 3) Evosure fed at 0.05% from d 0 to 42. Experimental diets were fed in 3 phases (Phase 1, d 0 to 7; Phase 2, d 7 to 21; and Phase 3, d 21 to 42 after weaning) and in meal form. Diets were formulated to meet the pigs' nutrient requirements

for each phase of the study. Phases 1 and 2 contained specialty protein and lactose sources at decreasing levels, respectively, whereas Phase 3 was corn–soybean meal based. Overall (d 0 to 42), there was no evidence for differences ($P > 0.10$) in growth performance or final BW. Therefore, under these experimental conditions, added Evosure, regardless of level, did not impact nursery pig performance.

Key Words: feed additive, growth performance, nursery pig
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Table 286.

Item	Control	Evosure, %		SEM	*P*-value <
		0.05/0.025	0.05/0.05		
BW, kg					
d 42	25.5	25.4	25.5	0.249	0.980
d 0 to 42					
ADG, g	456	455	459	5.77	0.905
ADFI, g	654	648	658	6.86	0.595
G:F	0.696	0.702	0.698	0.006	0.769

287 The effects of feeding narasin (Skycis) on late finishing pig performance.

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The purpose of this study was to determine the effects of narasin (Skycis; Elanco Animal Health, Greenfield, IN) on growth and performance of pigs during late finishing. In study 1, 240 barrows (Smithfield Premium Genetics, Rose Hill, NC) were weighed (82.3 kg initial BW) and randomly allocated to 1 of 2 treatments: control (CON) or narasin 15 ppm for 35 d. All pigs were then fed CON for 7 d prior to harvest. Each treatment had 15 pens containing 8 pigs per pen (0.87 m^2 per pig). In study 2, 416 barrows and gilts (PIC Landrace × Large White composite females mated to Smithfield Premium Genetics) were weighed (84.5 kg initial BW) and randomly allocated to 1 of 2 treatments: control (CON) or narasin 15 ppm for 35 d. Each treatment had 26 pens containing 8 pigs per pen (0.78 m^2 per pig). Pigs were weighed on d 0 and 35 and at harvest to determine start weight, harvest weight, and ADG. Feed issuance and weigh backs were recorded to determine ADFI and G:F. Pigs were individually tattooed and transported to a commercial packer for harvest and collection of HCW. Data were analyzed in SAS (SAS Inst. Inc., Cary, NC) using PROC GLM. Fixed effects included treatment, room, and sex. Pen was the experimental unit. In study 1, pigs fed narasin had greater ($P < 0.05$) ADG (1.185 vs. 1.140 kg) and ADFI (3.33 vs. 3.24 kg) than pigs fed the CON diet. In study 2, gilts fed narasin tended ($P = 0.08$) to have greater ADG (1.13 vs. 1.08 kg) and had superior ($P < 0.05$) G:F (0.362 vs. 0.347) when compared with CON-fed gilts. Across both studies 1 and 2, pigs fed narasin had greater ($P < 0.05$) ADG (1.138 vs. 1.100 kg) and G:F (0.363 vs. 0.355) than pigs fed CON. Market weight CV tended ($P = 0.09$) to be lower for narasin when compared with CON (8.4 vs. 9.1%). Results showed that supplementing diets with narasin for 35 d prior to harvest significantly improved growth performance and feed efficiency of finishing pigs.

Key Words: growth, narasin, pig
doi:10.2527/asasmw.2017.287

288 Effects of AminoGut and diet formulation approach on growth performance in nursery pigs.

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Diets containing animal protein sources have more glutamine than plant protein-based diets. AminoGut (Ajinomoto Heartland, Inc., Chicago, IL) is a product containing glutamine and glutamate. This study was conducted to determine the effects of protein source and AminoGut (Gln+Glu) on growth performance in nursery pigs from 5 to 27 kg. A total of 1,134 pigs (PIC 337 × 1050; 5.3 ± 0.08 kg) were used in a 52-d trial. Pens were assigned to treatments in a randomized complete block based on initial BW (7 pens/treatment). Treatments were a 2 × 3 factorial with 2 protein sources (animal [2.5% fish meal and 4% bovine blood plasma {d 0–10} and 5% fish meal {d 10–24}] vs. plant [6.5 {d 0–10} and 5% {d 10–24} fermented soy protein]) and 3 Gln+Glu durations (0, 10, and 24 d). Diets also contained 18 (d 0–10) and 25% (d 10–24) soybean meal. The Gln+Glu addition was 0.8% from d 0 to 10 and 0.6% from d 10 to 24. From d 24 to 52, pigs were fed a common diet. Statistical analysis was performed using PROC GLIMMIX (SAS; SAS Inst. Inc., Cary, NC). From d 0 to 10, pigs fed animal protein–based diets had marginally significant greater ADG ($P = 0.074$) and increased G:F ($P = 0.016$) compared with pigs fed plant-based diets; however, after d 10, no evidence of differences was observed between pigs fed different protein sources. From d 10 to 24, pigs fed Gln+Glu had increased ADG ($P = 0.019$) and G:F ($P = 0.001$). From d 0 to 24, pigs fed Gln+Glu had marginally significant improvement in ADG ($P = 0.059$) and increased G:F ($P = 0.010$) compared with pigs not fed Gln+Glu. From d 24 to 52, pigs previously fed Gln+Glu for 10 d had marginally significant improvement in G:F ($P = 0.057$) compared with pigs not fed Gln+Glu or fed Gln+Glu for 24 d. Overall (d 0–52), there was no evidence of differences in growth performance due to Gln+Glu. In conclusion, feeding Gln+Glu for 10 d after weaning improved growth performance until d 24, but there was no carryover effect when a common diet was fed, and dietary protein source did not influence the response to Gln+Glu. Further research should evaluate Gln+Glu