

**354 Effects of Monosodium Glutamate and AminoGut on Nursery Pig Performance.** A. B. Lerner<sup>\*1</sup>, M. D. Tokach<sup>1</sup>, J. M. DeRouche<sup>1</sup>, S. S. Dritz<sup>1</sup>, J. C. Woodworth<sup>1</sup>, B. D. Goodband<sup>1</sup>, K. J. Touchette<sup>2</sup>, <sup>1</sup>Kansas State University, Manhattan, KS, <sup>2</sup>Ajinomoto Heartland, Inc., Chicago, IL

Research indicates that dietary addition of AminoGut (product combining glutamine and glutamate; Ajinomoto Heartland, LLC, Chicago, IL) improves nursery pig performance; however, it is unknown whether the response is due to glutamine, glutamate, or their combination. In a 42-d study, 1,134 nursery pigs (PIC 359 × 1050, 4.9 kg BW) were used to determine the effects of monosodium glutamate (MSG), glutamine (Gln), or AminoGut on growth performance. Pigs were fed 6 dietary treatments in 2 phases from d 0 to 7 and 7 to 21 post-weaning. Treatments included a control diet, or the control with 0.5, 1.0, or 1.5% MSG, a combination of 1.0% MSG and 0.4% glutamine fed in both phases, or 0.8 and 0.6% AminoGut fed in phase 1 and 2, respectively. A common diet was fed from d 21 to 42. Pigs were assigned to pens at weaning and pens were assigned to treatment in BW blocks in a randomized complete block design with 7 replicate pens/treatment. Data were analyzed using Proc Mixed with pen as experimental unit. Linear and quadratic response to MSG was tested. Mean separation was used to determine response to Gln and AminoGut. During phase 1, there was no evidence for difference ( $P>0.453$ ) for ADG, ADFI, or G:F with the addition of MSG, AminoGut, or MSG+Gln. There was no evidence feeding MSG improved ADG or ADFI ( $P>0.163$ ) in phase 2, but marginally improved (linear,  $P=0.094$ ) G:F. Pigs fed AminoGut had improved ADG ( $P<0.05$ ) compared with all other treatments and increased ( $P<0.05$ ) ADFI compared with pigs fed 0.5, 1.0, or 1.5% MSG. Feeding AminoGut resulted in improved ( $P<0.05$ ) G:F compared with 0, 0.5, or 1.0% MSG, or MSG+Gln. There was no evidence for differences ( $P>0.105$ ) during the common period or overall. There was no evidence

feeding MSG alone or with Gln improved post-weaning growth performance; however, feeding AminoGut enhanced growth and feed efficiency from d 7 to 21 post-weaning compared with pigs fed the control diet.

**Key Words:** growth, monosodium glutamate, nursery pigs

**355 Digestibility Marker Type, but Not Inclusion Level Affects Apparent Digestibility of Gross Energy and Nitrogen and Marker Recovery in Growing Pigs.** T. Wang<sup>\*</sup>, O. Adeola, *Department of Animal Sciences, Purdue University, West Lafayette, IN*

This study was conducted to investigate if the apparent ileal digestibility (AID) of GE or nitrogen (N) was influenced by digestibility marker (DMr) level and type, and oat bran (OB) level, and if the apparent total tract digestibility (ATTD) of GE or DMr recovery was influenced by the three aforementioned factors and duration of feces collection (3 or 5 d). Six diets were formulated as a 3 × 2 factorial arrangement with three DMr levels (2.5, 5.0, or 7.5 g/kg) and two OB levels (0 or 100 g/kg). Chromic oxide and titanium dioxide were used as DMr and the analyzed values in diets were 1.64, 3.09, 4.65, 1.66, 3.18, and 4.70 g/kg for Cr, and 1.49, 2.99, 4.41, 1.52, 3.04, and 4.48 g/kg for Ti. In Exp. 1, eighteen barrows fitted with T-cannulas at the distal ileum were used in a triplicate 6 × 2 incomplete Latin Square design with 6 dietary treatments and 2 periods. The ileal digesta were collected for 3 d after 5-d adaptation, and the AID of GE and N were determined. In Exp. 2, seventy-two barrows were assigned in a randomized complete block design with diets and duration of feces collection. Feces were quantitatively collected with the marker-to-marker method after 7-d adaptation. The ATTD of GE and DMr recovery were determined by measuring Cr or Ti. The data were analyzed as split-plot arrangement using the MIXED procedure of SAS. In both experiments, there was no interaction among factors. In Exp. 1, the AID of GE

	Control	0.5% MSG	1.0% MSG	1.5% MSG	MSG+Gln	AminoGut	SEM
Phase 1 (d 0 to 7)							
ADG, g	33	20	23	26	33	21	8.14
ADFI, g	182	195	190	190	193	191	5.64
G:F	0.178	0.105	0.120	0.128	0.171	0.107	0.0433
Phase 2 (d 7 to 21)							
ADG, g	262 <sup>b,c</sup>	251 <sup>c</sup>	262 <sup>b,c</sup>	263 <sup>b,c</sup>	271 <sup>b</sup>	296 <sup>a</sup>	7.5
ADFI, g	398 <sup>a,b</sup>	370 <sup>c</sup>	388 <sup>b,c</sup>	384 <sup>b,c</sup>	399 <sup>a,b</sup>	416 <sup>a</sup>	9.5
G:F	0.657 <sup>b</sup>	0.678 <sup>b</sup>	0.677 <sup>b</sup>	0.684 <sup>a,b</sup>	0.679 <sup>b</sup>	0.711 <sup>a</sup>	0.0118

<sup>a,b,c</sup>Means with different superscripts differ  $P<0.05$ .