299 Evaluation of dietary electrolyte balance on nursery pig performance. A. M. Jones*, J. C. Woodworth, S. S. Dritz, M. D. Tokach, J. M. DeRouchey, R. D. Goodband, *Kansas State University, Manhattan*.

A recent study observed that nursery pigs fed and increasing dietary electrolyte balance (dEB; exceeding 150 mEq/kg) had decreased growth performance. To confirm this response, pigs (n = 2,888; PIC 327 × L42; 5.2 kg initial BW) were used in a 35-d study to evaluate the effects of dEB on growth performance. There were 30 pigs/pen (60 pigs/double-sided feeder) and 12 replications (feeder)/treatment. Pens of pigs were allotted by BW and sex on arrival and randomly assigned to 1 of 4 dietary treatments. Diets were corn–soybean meal based with dried whey and other specialty protein sources used in Phase 1, with decreased amounts in Phase 2. Dietary electrolyte balance was determined using the equation dEB (mEq/kg) = (Na × 434.98) + (K × 255.74) − (Cl × 282.06). Phase 1 and 2 diets had dEB of 84, 137, 190, and 243 and 29, 86, 143, and 199 mEq/kg, respectively. Limestone was used as the main Ca source in the high-dEB diet and was replaced by increasing $CaCl_2$ in other experimental diets. The highest dEB diets required additions of 0.55 and 0.80% limestone for Phase 1 and 2, respectively. The lowest dEB diets were achieved by adding 1.17 and 1.25% $CaCl_2$ in Phase 1 and Phase 2, respectively. Dietary Ca concentrations were maintained in the 3 highest dEB diets but increased in the low-dEB diet with the increasing level of $CaCl_2$. From d 21 to 35, a common Phase 3 diet (257 mEq/kg) was fed to all pigs. Overall (d 0 to 35), increasing dEB from d 0 to 21 increased (linear, $P < 0.001$) ADG and final BW, which was the result of increased (quadratic, $P < 0.001$) G:F and a tendency for greater (linear, $P = 0.077$) ADFI. In contrast to the previous research, this study suggests that feeding increasing dietary dEB in nursery diets increased growth performance of weanling pigs.

Key Words: dietary electrolyte balance, growth performance, nursery pig
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300 Comparative analysis of bacterial composition in the ileum of early postweaned piglets fed microbially enhanced soybean meal and fishmeal. J. L. Ortman[1,*], S. M. Sinn[1], B. St-Pierre[2], C. L. Levesque[1], *[1]South Dakota State University, Brookings, [2]Animal Science Department, South Dakota State University, Brookings*.

The objective of this research was to assess bacterial populations associated with the use of microbially enhanced soybean meal (ME-PRO) and fishmeal (FM). Weaned pigs were fed 1 of 3 experimental diets: 1) control (CON) containing corn and soybean meal, 2) CON + fishmeal (FM), and 3) CON + ME-PRO (ME-PRO) in Phase I (d 0–7 after wean; FM or MEPRO at 7.5%) and Phase II (d 8–21; FM or MEPRO at 5.0%). Ileal digesta was collected from 6 pigs/diet at d 21. Digesta microbial genomic DNA was used for PCR amplification of the 16S rRNA gene (V1–V3 region) and amplicons were sequenced via the Illumina Miseq 2x300 platform. The data produced 440,999 high-quality sequences that ranged from 1,938 to 66,953 sequences/animal. Data were analyzed using PROC MIXED in SAS (SAS Inst. Inc., Cary, NC) with pig as the experimental unit and pig(treatment) as the random effect. There was no effect of treatment ($P > 0.05$) on relative abundance of genera. *Lactobacillus* appeared to be the dominant genus. Pigs were assigned to a high (≥38% relative abundance) or low category (≤10% relative abundance). In pigs fed CON and FM, 75 and 71% of the samples, respectively, were assigned to the high category compared with 50% in pigs fed ME-PRO (χ^2, $P = 0.596$). Nine operational taxonomic units (OTU) made up the *Lactobacillus* genus and 3 OTU appeared to be dominant. They are closely related to *Lactobacillus amylovorus*, *Lactobacillus amylovorus*, and *Lactobacillus crispatus*

Table 299.

	mEq/kg						
	Phase 1						
	84	137	190	243		Probability, *P*-value <	
	Phase 2						
	29	86	142	199	SEM	Linear	Quadratic
d 0	5.19	5.19	5.20	5.17	0.053	0.704	0.502
d 21	9.40	9.78	10.01	10.21	0.084	<0.001	0.179
d 35	15.56	15.74	15.94	16.02	0.120	<0.001	0.543
d 0–21							
ADG, g	193	211	219	235	3.3	<0.001	0.807
ADFI, g	252	256	253	268	3.9	0.003	0.103
G:F	0.77	0.83	0.87	0.87	0.008	<0.001	<0.001
d 0–35							
ADG, g	290	295	299	306	3.4	<0.001	0.736
ADFI, g	388	390	391	397	4.8	0.077	0.594
G:F	0.76	0.78	0.80	0.80	0.005	<0.001	0.030