.90 ± 0.03 kg/d, WB), were more efficient (.365 vs .337 ± 0.009, WB) and had greater Carc gain (14.2 vs 12.7 kg). The advantage of H-SBM, under conditions of high immune stress, was observed for Carc ADG and G:F (+12.8, +9.7% respectively). The beneficial effect of H-SBM was evident at each lysine level for WB ADG and G:F (SBM x lysine, $P > 0.10$). Carcass yield was low but similar for SBM level ($P > 0.90$, 74.7%), which is contrary to our results with healthy pigs. The SID lysine requirement (G:F) for the H-SBM regimen was 0.95%, using WB and Carc G:F. This estimate was lower for pigs fed L-SBM diets (0.85%). Some component of SBM appears to modify the impact of high immune stress on G:F ratio and the SID lysine requirement. We conclude that H-SBM level significantly reduces the negative effect of inflammatory disease on ADG and G:F. The mechanism is unclear but the anti-inflammatory SBM isoflavones may be involved.

Key Words: pigs, soybean meal, immune stress

175 Effect of ractopamine HCl (Paylean) feeding programs on growth performance and carcass characteristics of finishing pigs. J. Y. Jacela*, S. S. Dritz, M. D. Tokach, J. M. DeRouchey, R. D. Goodband, and J. L. Nelssen, *Kansas State University*, *Manhattan*.

A total of 1,099 pigs (BW=94 kg) were used to evaluate the effect of ractopamine HCl (RAC) feeding programs on growth and carcass traits of finishing pigs. Pigs were randomly assigned to 1 of 3 treatments (14 pens/treatment; 26 pigs/pen) balanced by average BW within gender. Treatments were a basal diet with: 1) 0 ppm RAC for 28 d (control), 2) 0 ppm RAC from d 0 to 7 and 4.5 ppm RAC from d 7 to 28 (constant), and 3) 4.5 ppm from d 0 to 14 and 6.75 ppm from d 14 to 28 (step-up). Pig ADG, ADFI, and G:F were determined weekly, and carcass data were collected. From d 0 to 7, step-up pigs had improved ($P < 0.04$) ADG, ADFI, and G:F compared to all other treatments. From d 7 to 28, pigs fed the constant and step-up treatments had greater ($P < 0.01$) ADG (942 and 858 vs 755 g) and G:F (0.36 and 0.35 vs 0.28) than control pigs. However, step-up pigs had lower ($P < 0.01$) ADG and ADFI (2.48 vs 2.65 kg) but similar ($P > 0.27$) G:F compared to constant pigs. Overall, ADFI ($P = 0.15$) was similar between treatments, but RAC-fed pigs had greater ADG than control pigs ($P < 0.01$; 949 and 932 vs 796g) which led to improved G:F ($P < 0.01$; 0.36 and 0.36 vs 0.30). Overall performance of RAC-fed groups was similar. RAC-fed pigs had heavier carcass ($P < 0.05$; 91.6 and 90.4 kg vs 87.0 kg) and tended to have greater yield ($P < 0.10$) than control pigs. Among the 3 groups, step-up pigs had the greatest ($P < 0.05$) percentage lean (57 vs 56% and 55%), loin depth (6.5 vs 6.2 and 6.1cm), and FFLI (50.8 vs 50.1 and 50.0), and the lowest BF depth ($P < 0.01$; 1.57 vs 1.72 cm and 1.73cm). Both RAC-fed groups had greater ($P < 0.05$) revenue than control pigs. Feed cost was highest ($P < 0.01$) in the constant group and lowest in the control. Income over feed cost tended ($P < 0.07$) to be higher for RAC-fed pigs than control pigs. In conclusion, feeding a constant level of 4.5 ppm RAC for 21 d improved growth similar to feeding the 28-d step-up program; however, the 28-d RAC step-up program resulted in additional improvement in carcass traits.

Key Words: growth, pig, ractopamine

176 Evaluation of PEP2 in nursery pig diets. A. J. Myers*[1], M. D. Tokach[1], R. D. Goodband[1], S. S. Dritz[1], N. W. Shelton[1], G. Papadopoulos[1], J. M. DeRouchey[1], J. L. Nelssen[1], and D. McKilligan[2], [1]*Kansas State University*, *Manhattan*, [2]*Protein Resources*, *West Bend, IA*.

A total of 300 nursery pigs (PIC 327 × 1050, initially 5.4 kg and 21 d of age) were used in a 25-d study to determine the effects of PEP2 (proteins enzymatically processed) on growth performance of weaned pigs. PEP2 is a combination of refined porcine intestinal mucosa derived from heparin production, co-dried with enzymatically processed vegetable protein. There were 5 dietary treatments: a negative control containing no specialty protein sources, the negative control diet with 4, 8, or 12% PEP2 in phase 1 and 2, and a positive control containing 4% spray-dried animal plasma (SDAP) in Phase 1 and 4% select menhaden fish meal in Phase 2. Phase 1 diets were fed in pellet form from d 0 to 11. Phase 2 diets were fed in meal form from d 11 to 25. In Phase 1, increasing PEP2 improved (linear; $P < 0.01$) G:F. However, pigs fed SDAP had greater ($P < 0.05$) ADG and G:F than pigs fed PEP2 diets. In Phase 2 and overall, increasing PEP2 increased (quadratic; $P < 0.01$) ADG, and G:F with the greatest response observed at 4% PEP2. Pigs fed PEP2 had greater ($P < 0.01$) ADG and ADFI than pigs fed the positive control diet containing fish meal and pigs fed the negative control diet. Overall (d 0 to 25), pigs fed the positive control diet and those fed PEP2 had improved ADG and G:F than pigs fed the negative control. In conclusion, although pigs fed SDAP in Phase 1 had better ADG and G:F than pigs fed the increasing levels of PEP2, in Phase 2, pigs fed 4% PEP2 had greater ADG and G:F than pigs fed 4% select menhaden fish meal.

Table 1. Effects of PEP2 on nursery pig performance

item	Negative Control	4% PEP2	8% PEP2	12% PEP2	Positive Control	SEM	*P*-value	PEP2 Linear	PEP2 Quadratic
D 0 to 11									
ADG, g	193	187	190	195	221	9.4	0.152	0.85	0.56
G:F	0.97	0.99	0.98	1.00	1.07	0.047	0.016	0.48	0.89
D 11 to 25									
ADG, g	371	433	426	416	400	13.7	<0.01	<0.01	<0.01
G:F	0.67	0.75	0.73	0.73	0.74	0.015	<0.01	<0.01	<0.01
D 0 to 25									
ADG, g	293	324	322	319	321	8.6	0.036	0.03	<0.01
G:F	0.73	0.80	0.78	0.79	0.81	0.008	<0.01	0.02	<0.01

Key Words: pig, fish meal, spray dried animal plasma

177 Growth performance, nutrient digestibility, intestine morphology, blood profiles, and microbiota in weanling pigs fed single cell protein. J. P. Wang*[1], J. D. Kim[2], J. I. Kim[2], J. H Lee[1], T. X. Zhou[1], and I. H. Kim[1], [1]*Dankook University, Department of Animal Resource & Science*, *Choenan, Choongnam, Korea*, [2]*CheilJedang. Corp. Bio Business*, *Seoul, Korea*.

A total of 120 weaned barrows (8.47±0.49 kg; 28 d of age) were used in a 35-d growth study to evaluate the effects of single cell protein (SCP) on growth performance, apparent total tract digestibility (ATTD) of DM and N, blood immunoglobulin G (IgG), uric acid concentration, small intestinal morphology, and microbiota. Pigs were randomly allotted to 3 treatments according to their BW (5 pigs/pen, 8 replicates/treatment). Dietary treatments were corn-soybean basal diet and basal diet supplemented with SCP at 1.5% (SCP1.5) and 3.0% (SCP3.0), respec-