1) T1 (2% cottonwood sawdust), 2) T2 (1% cottonwood sawdust + 1% pine cone meal) and 3) T3 (2% pine cone meal). There were five replicate pens per treatment and four pigs per pen. During the overall period, there were no significant differences in ADG, ADFI and gain/feed ratio among treatments (P>0.05). Also, nutrient digestibility and blood characteristics were not affected by dietary treatments. At the end of this experiment, a*-value of logissimus dorsi muscle color and sensory evaluation color were higher in T3(18.15; 2.36) treatment than T1(16.50; 1.98) treatment (P<0.05). For fatty acid content of lean, C18:1 and total MUFA were significantly lower in T1(34.70%; 38.10%) treatment than other (38.67% and 38.73%; 42.09% and 42.07%) treatments (P<0.05). However, total ω6 and total PUFA were higher in T1(15.89%; 16.31%) treatment than T2(11.78%; 12.17%) treatment (P<0.05). For fatty acid content of fat, total SFA was significantly higher in T2(35.97%) treatment than T3(33.68%) treatment (P<0.05). C18:1 was higher in T2(39.21%) treatment than T1(37.86%) treatment (P<0.05). There were no significant differences in fecal noxious gas emission compounds among the treatments. In conclusion, dietary supplementation of pine cone meal influenced meat color and fatty acid composition of pork in finishing pigs. However, growth performance, blood characteristics and fecal odor emission compounds were not affected by dietary treatments.

Key Words: Pine cone meal, Fatty acid, Finishing pigs

188 Evaluation of dextrose, lactose, and whey sources in phase 2 starter diets for weanling pigs. J. R. Bergstrom*, C. N. Groesbeck, J. M. Benz, M. D. Tokach, J. L. Nelssen, S. S. Dritz, J. M. DeRouchey, and R. D. Goodband, *Kansas State University, Manhattan.*

Two experiments were conducted to evaluate dextrose, lactose, and whey sources for phase 2 diets. In Exp. 1, 228 pigs (7.8 kg) were used in a 14-d experiment. There were 6 treatments which included: 1) control (corn-soybean meal diet), or control diet with 2) 7.2% lactose; 3) 7.2% dextrose anhydrous; 4) 7.2% dextrose monohydrate; 5) 10% feed-grade whey; and 6) 10% food-grade whey. Pigs were blocked by BW and randomly allotted to treatment on d 7 after weaning, with 8 reps and 4 or 5 pigs/pen. Pigs fed lactose (381 g/d) or food-grade whey (376 g/d) had improved (P<0.05) ADG compared to pigs fed feed-grade whey (331 g/d) with pigs fed the control and dextrose sources (358, 358 and 363 g/d) being intermediate. Pigs fed food-grade whey had greater (P<0.05) G/F than pigs fed dextrose monohydrate. Feeding the control diet improved (P<0.05) margin-over-feed cost (MOF) compared to diets containing lactose, dextrose anhydrous, or either whey source. In Exp. 2, 352 pigs (7.8 kg) were used in a 14-d experiment to evaluate 7 sources of whey. There were 8 treatments consisting of a corn-soybean meal-based control diet and 7 diets containing 10% whey, each of a different source. Pigs were blocked by BW and randomly allotted to treatment on d 5 after weaning, with 8 reps and 5 or 6 pigs/pen. Pigs fed sources A and E had improved (P<0.05) ADG compared to the control and sources B and D with pigs fed other sources being intermediate (295, 349, 308, 327, 308, 349, 327, and 318 g/d for the control and sources A-F). Pigs fed source E had greater (P<0.05) ADFI than the control or sources B, C, D, and G. Pigs fed source A had improved (P<0.05) G/F compared to the control with pigs fed other sources being intermediate. Feeding the control diet improved (P<0.05) MOF compared to sources B, D, and G. In conclusion, differences in growth performance of pigs fed various lactose and dextrose sources exist. Feeding a Phase 2 diet without a lactose source provided the greatest margin over feed in these trials.

Key Words: Lactose, Dextrose, Whey

189 Effects of feeding fermented soy protein (FSP) on nitrogen balance and apparent ileal amino acid digestibility in weaned pigs. J. S. Yoo*[1], J. H. Cho[1], Y. J. Chen[1], S. O. Shin[1], H. J. Kim[1], Y. Hwang[1], Y. Wang[1], K. Y. Whang[2], I. H. Kim[1], S. B. Cho[3], and D. W. Kim[3], [1]*Dankook University, Cheonan, Choognam, Korea,* [2]*Korea University, Seoul, Korea,* [3]*National Institute of Animal Science, Suwon, Korea.*

Four [(Y×L)×D] barrows were surgically fitted with a simple T-cannula approximately 15 cm prior to the ileo-cecal junction. The experimental designs were 4×4 latin squares with pigs and periods as blocking criteria. The treatments were SDPP (spray-dried porcine plasma 3% diet), RBP (RubyZyme 5% diet), PSP (include PepSoyGen 5% diet) and RPP (RubyZyme 2.5% + PepSoyGen 2.5% diet). RubyZyme and PepSoyGen were both the fermented soy products. Fecal DM excretion, fecal N concentration, fecal N excretion were increased in RBP, PSP and RPP treatments compared to SDPP treatment (P<0.05). Total excretion was increased for the RPP treatment (922.13 g/d) compared with the PSP treatment (814.23 g/d; P<0.05). In the apparent digestibility, DM and N digestibilities were decreased in RBP, PSP and RPP treatments compared with SDPP treatment (P<0.05). Ash and energy digestibilities were higher in SDPP and RBP treatments than PSP and RPP treatments (P<0.05). Energy apparent ileal digestibility was higher in SDPP treatment (85.54%) compared with RBP treatment (83.27%; P<0.05). Total amino acid apparent ileal digestibility was higher for the SDPP treatment (87.57%) than other treatments (RBP: 82.33%; PSP: 79.95%; RPP: 80.03%; P<0.05). In conclusion, animal protein has more bioavailability than plant protein. However, N absorption ratio and N apparent ileal digestibility was shown similar level to SDPP (81.63% and 79.78%) and RBP (85.77% and 84.53%). Moreover, among different method fermented soybean protein there were different effects on nitrogen balance, but no effects on apparent ileal amino acid digestibility.

Key Words: Fermented soy protein, Nitrogen balance, Apparent ileal amino acid digestibility

190 Evaluation of FSP (fermented soy protein) to replace soybean meal in weaned pigs: growth performance, blood urea nitrogen and total protein concentrations in serum and nutrient digestibility. J. H. Cho*[1], B. J. Min[1], Y.J. Chen[1], J. S. Yoo[1], Q. Wang[1], J. H. Ahn[2], I. B. Chung[2], and I. H. Kim[1], [1]*Dankook University, Cheonan, Choongnam, Korea,* [2]*National Institute of Animal Science, Suwon, Gyeonggi-do, Korea.*

A total of one hundred and forty four weaned pigs with an average BW of 8.09±0.05 kg were used in 28 days study. Pigs blocked by initial body weight and randomly allocated to one of four dietary treatments in a randomized complete block design(6rep./Trt., 6 pigs/ pen). Dietary treatments included: SBM (corn-soybean meal basal diet), F 5, 10 and 15 (fermented soy product was used at 5, 10 and 15% to replace soybean meal in basal diet, respectively). Average daily gain, feed intake, dry matter and nitrogen digestibility were not affected (P>0.05) by dietary treatments during the entire 4-wk study period. There were linear increments in feed efficiency (P<0.01) as the dietary FSP (0.684, 0.676, 0.728 and 0.747) level increased during entire feeding period. Digestibilities of histidine (68.13, 67.70, 73.92 and 73.65%), lysine (77.75, 77.72, 81.62 and 81.68%) and methionine (70.98, 69.95, 74.61 and 76.24%) were increased as the FSP level increased (linear effect, P<0.05, P<0.01). Among non-essential amino acids, alanine (67.43, 66.33, 71.04 and 72.66%), glutamic acid (77.52, 76.90, 80.20 and 81.03%), serine (75.37, 74.76, 78.87 and 79.21%), tyrosine (70.49,