(soy oil 4.11%+coconut oil 1.0%), 3) LLA1.0 (soy oil 4.11%+lauric acid(46%) 1.0%), 4) HLA0.5 (soy oil 4.61%+lauric acid(99%) 0.5%), 5) HLA1.0 (soy oil 4.11%+lauric acid(99%) 1.0%) and 6) MFA1.0 (soy oil 4.11%+medium chain fatty acid(C8:0, C10:0 96%) 1.0%). The pigs were allotted into five pigs per pen with four replicate pens per treatment by completely randomized design. From d 0 to 35, ADG was greater in HLA1.0 and MFA1.0 treatments than CON treatment (p<0.05). ADFI was greater in CO1.0 and MFA1.0 treatments than HLA0.5 treatment (p<0.05). In week 2, digestibility of dry matter was higher in CO1.0, HLA1.0 and MFA1.0 treatments than CON treatment (p<0.05). Nitrogen digestibility was increased in CO1.0, LLA1.0 and HLA1.0 treatments compared to CON treatment (p<0.05). Energy digestibility was higher in CO1.0 treatment than CON treatment (p<0.05). In week 5, CON showed the lowest digestibilities of dry matter, nitrogen and energy among treatments (p<0.05). Saturated fatty acid digestibility was increased in CO1.0 treatment compared to other treatments (p<0.05). Mono unsaturated fatty acid digestibility were increased in CO1.0 treatment compared to LLA1.0, HLA0.5 and MFA1.0 treatments (p<0.05). CON and CO1.0 treatments showed the highest digestibility of n-6 fatty acid (p<0.05). In blood sample at week 5, albumin concentration in CO1.0 and MFA1.0 treatments were improved compared to CON treatment (p<0.05). IgG concentration in LLA1.0, HLA0.5 and MFA1.0 treatments were greater than CON treatment (p<0.05). WBC concentration in MFA1.0 treatment was increased compared to CON treatment (p<0.05). Therefore, it suggested that lauric acid and middle chain fatty acid supplementation could improve growth performance, nutrient digestibility, albumin, IgG and WBC concentration of weaning pigs.

Key Words: coconut oil, fatty acid digestibility, pigs

212 Effects of American and Chinese DDGS on meat quality and amino acid content of pork. H. D. Jang*[1], J. W. Hong[2], J. H. Lee[2], W. S. Lee[2], C. Y. Lee[3], I. B. Chung[4], and I. H. Kim[1], [1]*Dankook University, Cheonan, Korea*, [2]*Institute of Animal Science, DAESANG Farmsco Co., Ltd, Korea*, [3]*Jinju National University, Korea*, [4]*National Institute of Animal Science, Korea*.

This study was conducted to evaluate the effects of corn distiller's dried grains with solubles (DDGS) from American and Chinese sources on quality and amino acid content of pork. 120 crossbred pigs (64.50±1.70kg) were used in a 56 day growth assay (10 pens/treatment, 4 pigs/pen). Dietary treatments were: 1) CON (basal diet), 2) ADS (15% American DDGS), and 3) CDS (15% Chinese DDGS). M. logissimus dorsi was used to evaluate meat quality. Backfat thickness and lean percentage were not affected by treatment. Meat color (2.0, 2.3, 2.3) and redness (b*) (16.91, 17.24, 18.41) were significantly increased in DDGS treatments compared to CON (P<0.05). Water holding capacity (55.10 vs. 39.23 vs. 53.52 %) was higher in CON and CDS compared to ADS (P<0.05). The pH of meat (5.53 vs. 5.61 vs. 5.71) was greater on DDGS than CON (P<0.05). The content of amino acids in the meat were measured. CDS had a higher arginine (1.34 vs. 1.40 vs. 1.47 %), isoleucine (0.85 vs. 1.00 vs. 1.09 %), leucine (1.74 vs. 1.81 vs. 1.84 %) and lysine (1.85 vs. 1.93 vs. 2.02 %) concentration compared to other treatments (P<0.05), with intermediate values on DDGS. Methinonine (0.57 vs. 0.60 vs. 0.61 %), phenylalanine (0.88 vs. 0.94 vs. 0.94 %), threonine (0.96 vs. 1.03 vs. 1.06 %) and valine (0.93 vs. 1.11 vs. 1.13 %) concentration were significantly improved by both DDGS treatments (P<0.05). Cysteine (0.42 vs. 0.45 vs. 0.52 %) was greater on CDS than CON and ADS (P<0.001). DDGS resulted in a higher cysteine concentration than CON (P<0.001). Proline (1.63 vs. 1.45 vs. 1.42 %) was significantly improved by CON compared to CDS (P<0.05). Tyrosine (0.77 vs. 0.83 vs. 0.84 %) was greater in pork from the two DDGS treatments than in pork from CON-fed pigs (P<0.01). In conclusion, redness and amino acid concentration in meat were positively affected by DDGS from different counties.

Key Words: DDGS, meat quality, finishing pigs

213 Validation of control diets for lactose and fish meal replacement studies in nursery pigs. R. C. Sulabo*, M. D. Tokach, J. M. DeRouchey, S. S. Dritz, R. D. Goodband, and J. L. Nelssen, *Kansas State University, Manhattan*.

A total of 180 nursery pigs (PIC, 7.5 kg and 28 d of age) were blocked by BW and randomly allotted to 1 of 6 treatments: 1) corn-soybean meal based diet (NC), 2) NC + 10% food-grade whey, 3) NC + 10% feed-grade whey, 4) Diet 2 + 4.5% select menhaden fish meal (fish meal), 5) Diet 2 + 2.25% fish meal + 1.25% spray-dried blood cells, and 6) Diet 2 + synthetic amino acids. Each treatment had 5 pigs per pen and 6 replications. The 21 d trial started 7 d after weaning. From d 0 to 14, pigs fed the diet containing 10% feed-grade whey tended to have greater ADG (P<0.07) and were heavier (P<0.08) than pigs fed the NC diet, with pigs fed the diet containing 10% food-grade whey being intermediate. Pigs fed either food- or feed-grade whey to the NC diet tended to have better (P<0.06) G:F compared with pigs fed the NC diet. Pigs fed phase 2 diets containing specialty protein sources tended to have greater ADG (P<0.07) and heavier (P<0.07) weights than pigs fed the diet containing 10% food-grade whey. Pigs fed the synthetic amino acids diet had similar (P>0.36) ADG and body weight as pigs fed the diet containing the same food-grade whey but without specialty proteins. From d 0 to 21, only numerical differences (P>0.15) were observed in performance between treatments. Our results indicate that the feed-grade whey and fish meal diets can serve as valid positive controls for lactose and fish meal replacement studies.

Table 1. Effects of lactose and fish meal replacement control diets on growth performance of nursery pigs during Phase 2

	Dietary treatment						
Item	Negative control	Food-grade whey	Feed-grade whey	SMFM + SDBC	SMFM	Synthetic amino acids	SED
d 0 to 14							
ADG, kg	0.35[a]	0.37[ab]	0.41[bc]	0.43[c]	0.43[c]	0.37[ab]	0.03
ADFI, kg	0.51	0.49	0.52	0.55	0.53	0.50	0.03
G:F	0.70[a]	0.74[b]	0.78[b]	0.78[b]	0.80[b]	0.74[ab]	0.02
Pig weight, kg							
d 0	7.5	7.5	7.5	7.5	7.5	7.5	0.005
d 7	9.4[a]	9.5[ab]	9.7[bc]	9.8[bc]	9.8[c]	9.4[a]	0.17
d 14	12.5[a]	12.7[ab]	13.2[bc]	13.5[c]	13.5[c]	12.7[ab]	0.39
d 21	16.6	16.6	17.4	17.4	17.5	16.6	0.51

Key Words: lactose, protein sources, nursery pigs

214 Comparison between the total fecal collection and indigestible marker methods to determine the digestibility of canola meals in growing pigs. C. A. Montoya* and P. Leterme, *Prairie Swine Centre Inc., Saskatoon, SK, Canada*.

The total fecal collection is the reference method for digestibility determination in pigs but it is time-consuming and expensive. Indigestible markers allow for incomplete collection and shorter periods but their