296 Evaluation of interactive effects of vitamin E and linseed oil as a source of omega-3 fatty acids on growth performance, blood characteristics and meat quality of finishing pigs. S. D. Upadhaya*, T. S. Li, Y. M. Kim, I. H. Kim, *Department of Animal Resource & Science, Dankook University, Cheonan, South Korea.*

Omega-3 and vitamin E are the essential nutrients which possess anti-inflammatory properties and have many health benefits for both human and animals. This study was conducted to evaluate the effects of supplementation of vitamin E and omega-3 fatty acid to corn soybean meal based diet on the growth performance, nutrient digestibility, blood profiles and meat quality of finishing pigs for a period of 12 wk. A total of 140 finishing pigs [(Yorkshire × Landrace) × Duroc] with an average initial BW of 46.5 kg were blocked and stratified based on sex and body weight to a 2 × 2 factorial design with the respective factors being 1) with and without 300 IU vitamin E (Vit E), and 2) with and without 0.75% of linseed oil as a source of omega-3 fatty acid (*n*-3 FA). Each treatment consisted of 7 replicate pens with 5 pigs (3 barrows and 2 gilts) per pen. The supplementation of Vit E improved ($P < 0.05$) overall ADG (828 g) compared with non supplemented group (800 g). The digestibility of nitrogen (N) tended to improve ($P = 0.07$) with the addition of Vit E in the diet. At wk 12, the concentration of IgG increased ($P < 0.01$) with the addition of Vit E (704 mg/dL vs. 660 mg/dL) in the diet whereas the concentration of cortisol was reduced ($P < 0.05$) with the addition of Vit E (1.1 µg/dL vs. 1.4 µg/dL) or *n*-3 FA (1.2 µg/dL vs. 1.4 µg/dL). Moreover there was an additive effect ($P = 0.03$) of the combined supplementation of Vit E and *n*-3 FA on cortisol concentration. Surface LM color (a*) scored higher (($P < 0.05$) with the supplementation of Vit E (17.1 vs. 16.6) However, the score of color based on sensory evaluation was lower ($P < 0.05$) in Vit E supplemented group (3.4 vs. 3.7) and drip loss was lower ($P < 0.05$) in Vit E supplemented groups (16.5% vs. 19.2%) on Day 5. In conclusion, vitamin E independently influenced overall daily gain, IgG and meat quality. However, additive effects of Vitamin E and omega-3 fatty acids were observed for cortisol concentration.

Key Words: finishing pig, omega-3 fatty acid, vitamin E

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297 Effects of dietary zinc source and level on nursery pig performance. K. E. Jordan[1], K. M. Gourley*[1], M. D. Tokach[1], R. D. Goodband[1], S. S. Dritz[1], J. M. DeRouchey[1], J. C. Woodworth[1], J. L. Usry[2], *[1]Kansas State University, Manhattan, [2]Micronutrients, Indianapolis, IN.*

A total of 360 pigs (initially 5.9 ± 0.14 kg BW) were used in a 28-d study to evaluate the effects of dietary Zn source and level on weanling pig growth performance. Pigs were randomly allotted to pen at weaning by initial BW. The pen was assigned in a completely randomized design to 1 of 9 dietary treatments arranged in a 2 × 4 + 1 factorial. There were 8 pens per treatment and 5 pigs per pen. The corn-soybean meal based diets consisted of a control diet containing 110 ppm Zn from $ZnSO_4$ from the trace mineral premix or the control diet with 390, 890, 1890, or 2890 ppm added Zn from either tetrabasic Zn chloride (TBZC; Intellibond Z; Micronutrients, Indianapolis, IN) or ZnO. This provided diets with a total of 500, 1000, 2000, or 3000 ppm added Zn. A 3 phase diet series was used with treatment diets fed during Phase 1 (d 0 to 7), Phase 2 (d 7 to 21) and Phase 3 (d 21 to 28). There were no Zn source × level interactions or Zn source differences observed for growth performance. From d 0 to 21, increasing Zn increased (linear; $P \leq 0.05$) ADG and ADFI with no difference in G:F. From d 21 to 28, pigs fed increasing Zn had increased (linear; $P = 0.018$) ADFI resulting in decreased G:F (quadratic; $P = 0.041$). Overall, from d 0 to 28, increasing Zn increased (linear; $P \leq 0.05$) ADG and ADFI without influencing G:F. On d 28, fecal samples were collected from 3 pigs in each pen and analyzed for DM content. There was a tendency ($P = 0.081$) for a Zn source × level interaction as increasing Zn from TBZC decreased fecal DM, whereas no difference in fecal DM was observed for increasing Zn from ZnO. In conclusion, increasing dietary Zn up to 3000 ppm increased ADG and ADFI but no differences existed between sources evaluated.

Key Words: growth performance, nursery pig, zinc

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Table 297.

	Total added dietary Zn, ppm								
	Control	IBZ				ZnO			
Item	110	500	1,000	2,000	3,000	500	1,000	2,000	3,000
D 0 to 28									
ADG, g	285	288	289	300	323	294	273	318	307
G:F, g	0.728	0.712	0.716	0.731	0.729	0.706	0.717	0.733	0.707

SEM = 13.4 for ADG and 0.0144 for G:F

298 Could zinc citrate supplementation during lactation increase the serum Zn levels at weaning? L. Blavi*, D. Solà-Oriol, J. F. Pèrez, *Animal Nutrition and Welfare Service, Department of Animal and Food Sciences, Universitat AutÚnoma de Barcelona, Bellaterra (08193), Spain.*

Zinc is essential for normal growth and development in all animals. In our previous studies it was observed that weaning causes a decrease in the serum Zn, and that piglets with low BW (5.5 kg) at weaning had lower Zn levels (0.79 mg/L) than piglets with a higher BW (8.63kg; 0.98 mg of Zn/L). It was hypothesized that supplementing with 6 mg/d of Zn (19.35mg of Zn Citrate) during the last 10 d of lactation may improve