

**W131 Linseed oil addition alters swine adipose fatty acid composition.** A. A. AbuGhazaleh\*, G. Apgar, and W. Brown, *Southern Illinois University, Carbondale*.

Previous studies have shown that including linseed oil (LSO) in swine diets increase the omega-3 fatty acids (FA) content in adipose tissues. The objective of this study was to determine the effect of the duration of LSO supplementation on omega-3 FA content in adipose tissues. Ninety six pigs (48 barrows and 48 gilts) with an average weight of 30 kg  $\pm$  3.7 were used in this study. Pigs were allotted to four dietary treatments (4 barrows and 4 gilts per pen with 3 pens per treatment) on the basis of body weight using a randomized complete block design. The four dietary treatments were: 1) conventional corn-soybean meal diet + 3% saturated fatty acid source (DM basis; CONT), 2) conventional corn-soybean meal diet + LSO at 3% (LS), 3) CONT diet fed until pigs reached a target weight of 60 kg  $\pm$  2.5 then switched to the LSO diet (LSO1) and 4) CONT diet fed until pigs reached a target weight of 80 kg  $\pm$  2.5 then switched to the LSO diet (LSO2). Pigs feed intake and growth performance were measured every 2 weeks. Pigs were slaughtered once they reached a target weight of 100  $\pm$  5 kg. Samples of adipose tissues were dissected at the 10th rib and analyzed for the concentration of FA. Treatment diets had no effects ( $P > 0.10$ ) on weight gain, back fat, marbling or color. Pigs on the LS diet tended ( $P < 0.13$ ) to have lower feed intake (2.26 kg/d) when compared with other treatment diets (2.61, 2.49, and 2.72 kg/d for the CONT, LSO1 and LSO2 diets, respectively). The concentrations of C16:0 and C18:0 were higher ( $P < 0.10$ ) while the concentration of C18:2n6 was lower ( $P < 0.10$ ) with the CONT and LSO2 diets when compared with the LS and LSO1 diets. The concentrations of C18:3n3 were higher ( $P < 0.10$ ) with the LS (8.73% of total FA) and LSO1 (8.49%) diets when compared with the CONT (3.13%) and LSO2 (4.57%) diets. The n6/n3 FA ratios were lowered ( $P < 0.10$ ) with the LSO supplementations averaging 3.68, 2.78, 1.76 and 1.63 with the CONT, LSO2, LSO1 and LS diets, respectively. In conclusion, LSO supplementation altered the FA profiles of adipose tissues without compromising pigs performance and such alteration is affected by the duration of LSO consumption.

**Key Words:** Linseed Oil, Fatty Acids

**W132 Influence of glycerol and added fat on finishing pig performance.** A. W. Duttlinger\*, M. D. Tokach, S. S. Dritz, J. M. DeRouchey, J. L. Nelssen, and R. D. Goodband, *Kansas State University, Manhattan*.

A study was conducted to determine the effects of dietary glycerol and fat on finishing pig performance. The experiment was conducted at a commercial swine research facility in southwest MN in August, 2007. Glycerol was procured and stored in the feed mill for approximately 60 d before diets were mixed. A total of 1,093 pigs (PIC, initially 77.7 kg) were used in a 28-d study. Pigs were blocked by initial weight and randomly allotted to 1 of 6 dietary treatments with 7 replications per treatment. Pigs were fed corn-soybean meal-based diets arranged in a 2  $\times$  3 factorial with main effects of glycerol (0, 2.5, or 5%) and added fat (0 or 6%). Overall (d 0 to 28), there was a fat  $\times$  glycerol interaction ( $P < 0.04$ ) for ADFI. As added glycerol increased, ADFI was not influenced in diets containing added fat; however, ADFI was reduced when increasing levels of glycerol were added to diets without fat. Pigs fed diets with added fat had improved ( $P < 0.01$ ) ADG and G:F compared

with pigs fed diets with no added fat. Increasing glycerol decreased ADG (linear,  $P < 0.02$ ) and ADFI (linear,  $P < 0.04$ ) and tended (linear,  $P < 0.11$ ) to decrease G:F which was due to the negative impact when added to diets without fat. In conclusion, 6% added fat improved ADG and G:F, but the glycerol used in this study decreased ADG and ADFI when added to diets without added fat. The storage of glycerol before use may have contributed to the negative impact on performance in this experiment.

**Table 1.**

Item	Added Fat, %:			Glycerol, %:			SE
	0	0	0	0	0	0	
ADG, kg	0.84	0.81	0.76	0.92	0.90	0.91	0.02
ADFI, kg	2.90	2.92	2.74	2.87	2.82	2.85	0.04
G:F	0.29	0.28	0.28	0.32	0.32	0.32	0.01

**Key Words:** Fat, Glycerol, Pigs

**W133 Conjugated linoleic acid and tryptophan supplementation improve immune response of weaned piglets.** J. Morales<sup>1</sup>, R. Gatnau<sup>2</sup>, and C. Pineiro<sup>\*1</sup>, <sup>1</sup>*PigCHAMP Pro Europa, SA, Segovia, Spain*, <sup>2</sup>*Molimen, Barcelona, Spain*.

Conjugated linoleic acid (CLA) is a natural product that enhances immune function while decreasing the negative effects of inflammatory responses. This effect is especially interesting at weaning, when piglets are highly susceptible to enteric diseases. On the other hand, aminoacidic profile of proteins affecting the immune system is different than muscle proteins, especially higher Trp: Lys ratio. The aim of this study was to assess the effect of CLA in combination with two different Trp:Lys ratios in weaned piglets in a low-health status nursery unit. Therefore, there were four treatments arranged factorially with 2 CLA dietary contents (0 vs 1%) and 2 Trp:Lys dietary ratios (0.15 vs 0.22). For the experiment, 336 piglets were used (7.6  $\pm$  1.78 kg BW) and allotted in 48 pens. Average daily gain (ADG), feed intake and feed efficiency were controlled. Fecal consistency was assessed at 56 d of age (scale 0-normal, 1-soft, 3-diarrhea). During the trial period an acute outbreak of diarrhea occurred but, under these special circumstances, CLA supplementation improved ADG 80% ( $P = 0.0001$ ) and FGR 44% ( $P < 0.001$ ). Consequently, CLA supplemented piglets reached significantly higher final BW (13.5 vs 10.9 kg;  $P < 0.001$ ) than control piglets. Higher dietary Trp: Lys ratio allowed expressing CLA improvements in performance ( $P$  interaction  $< 0.10$  in ADG). On the other hand, Trp also improved ADG (170 vs 155 g/d;  $P = 0.02$ ). Mortality rate was not significantly affected, but in the total nursery period the highest risk group (0% CLA & low Trp content) showed the highest % of mortality (10.7%;  $P = 0.02$ ). Fecal consistency was only affected by CLA supplementation, which reduced the signs of diarrhea (0.9 vs 1.8;  $P = 0.001$ ). We conclude that 1 % of CLA supplementation improved ADG, clinical symptoms and decreased the number of animals that needed to be treated during an acute outbreak of diarrhea in the nursery period. Furthermore, higher dietary Trp content facilitates the expression of the CLA effect, demonstrating compatibility and certain synergy between both (CLA and Trp).

**Key Words:** Conjugated Linoleic Acid, Tryptophan, Piglet