



Carcass Composition of Pork Fed Poultry Fat, Flaxseed Oil, and Vitamin E

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Objectives

The objective of this research is to understand the carcass characteristics of pigs fed a combination of poultry fat, flaxseed oil and Vitamin E to possibly increase intramuscular fat percentage while decreasing external fat deposition.

Materials and Methods

Yorkshire pigs ($n = 96$) weighing approximately 50 kg were allocated to pens based on their weight and sex from the same genetic lines with 2 gilts or 2 barrows per pen. Forty-eight pens (24 gilt pens and 24 barrow pens) were assigned randomly to 8 dietary treatments in a 4×2 factorial arrangement with 3 gilt pens and 3 barrow pens per treatment. Two trials were conducted for a total of 96 pigs. Two corn-soybean meal finisher diets (1: 50 to 80 kg, 2: 80 to 110 kg) were formulated to contain 0, 2, 4 or 6% lipids and 11 (NRC, 2012) or 220 IU Vitamin E/kg. For all diets with lipids, 1% flaxseed oil was included and the remaining lipids supplied by poultry fat. Pigs were harvested ($n = 8$ groups) at an average pen weight of 110 ± 3 kg. After chilling for 24 h at $4 \pm 2^\circ\text{C}$, the following carcass characteristics were assessed and recorded: last rib fat thickness (LRFT), tenth rib fat thickness (TRFT), loin eye area (LEA), muscle score (MS), percent fat free lean (FFL), LAB color (L^* , a^* , b^*), pH loin (pHL), pH ham (pHH), National Pork Producers Council color score (NPPCCol), National Pork Producers Council marbling score (NPPCMar), belly flop

skin-side-down (SSD), and belly flop skin-side-up (SSU). Carcass data was analyzed using the Proc GLM analysis (SAS, 2002) with carcass weight included in the model as a co-variate. Pen was the experimental unit

Results

The main effect(s) of lipid content and Vitamin E concentration had no effect ($P > 0.05$) on LRFT, TRFT, LEA, MS, FFL, L^* , a^* , b^* , pHL, pHH, NPPCCol, SSD, or SSU. Within the main effect of Vitamin E, pigs fed the 220 IU concentration had a higher NPPCMar score ($P < 0.05$); 1.9 versus 1.4, respectively. However, when Vitamin E was combined with lipid diet components, no significant effect was observed for NPPCMar ($P > 0.05$). There was a Lipid X Vitamin E interaction for TRFT ($P < 0.05$) and FFL ($P < 0.05$). Feeding low levels of Vitamin E in combination with low levels of fat increases FFL by decreasing the TRFT. pHH and pHL ($P < 0.05$) were higher for Trial 1 than Trial 2; however there was an abnormal temperature fluctuation during the month that pigs from Trial 1 were harvested.

Conclusion

Producers might be satisfied knowing that a feeding program utilizing poultry fat in combination with flaxseed oil and Vitamin E at these levels will not negatively affect carcass composition and may increase FFL.