



## Meat Quality Assessment of Pork from Pigs Fed Poultry Fat, Flaxseed Oil and Supplemented With Vitamin E

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### Objectives

The objective of this research is to understand the meat quality characteristics of pigs fed a combination of poultry fat, flaxseed oil and supplemented with Vitamin E.

### 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  $4 \times 2$  factorial arrangement with 3 gilt pens and 3 barrow pens per treatment. Two trials were conducted for a total of 96 pigs. Corn-soybean meal finisher diets ( $n = 2$ ; 1: 50 to 80kg, 2: 80 to 110kg) 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  $110 \pm 3$  kg. After chilling for 24 h at  $4 \pm 2^\circ\text{C}$ , 1-in thick pork chops were fabricated from the left side of the carcass and individually packaged in vacuum sealed bags and frozen at  $-20 \pm 2^\circ\text{C}$  for further analysis. Color values ( $L^*$ ,  $a^*$ , and  $b^*$ ) and ultimate pH on the ham (pHH) and loin (pHL) were determined on the loin eye at the 10th/11th rib interface after chilling for 24 h at  $4 \pm 2^\circ\text{C}$  prior to carcass fabrication. Belly firmness, both skin-side up (SSU) and skin-side down (SSD) was determined after chilling for 24 h at  $4 \pm 2^\circ\text{C}$  immediately following carcass fabrication.

Chops were thawed at  $4 \pm 2^\circ\text{C}$  for analysis of drip loss, vacuum purge loss, marinade uptake, marinade cook loss, cook loss and WBS. Statistical analysis was conducted using the Proc GLM procedure in SAS (SAS Inst. Inc., Cary, NC). Pen was the experimental unit.

### Results

The main effect(s) of lipid content and Vitamin E concentration had no effect ( $P > 0.05$ ) on,  $L^*$ ,  $a^*$ ,  $b^*$ , pHL, pHH, SSD, SSU, vacuum purge, marinade uptake, marinade cook loss, cook loss, or WBS. Trial 1 had higher ( $P < 0.001$ ) values of pHH (5.84 vs. 5.54), pHL (5.66 vs. 5.45) and WBS (4.49 vs. 3.96). There was an abnormal temperature fluctuation during the month that pigs from trial 1 were harvested. There was a Trial  $\times$  VE interaction for drip loss ( $P = 0.0335$ ). Feeding low levels of Vitamin E (11 IU E/kg) in trial 2 increased drip loss. Trial 2, with lower pHH and pHL and a higher drip loss could be attributed to the protein interaction related to pH.

### Conclusion

A feeding program utilizing poultry fat in combination with flaxseed oil, and Vitamin E at these levels will not negatively affect the variables for meat quality assessed in this project. With the exception of the Trial  $\times$  VE interaction, but only for Trial 2. Further analysis of additional meat quality assessment coupled with carcass data need to be evaluated before recommendation can be made to producers on the advantages of using this feeding system.