



## Effect of Different Fat Sources and Vitamin E Isoforms/Levels on Carcass Characteristics and Meat Quality of Pigs Grown to 150 Kg

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### Objectives

The objective was to evaluate the effect of supplementing  $\alpha$ - and  $\gamma$ -tocopherol vitamin E isoforms with corn oil and tallow on carcass characteristics and meat quality of pigs grown to heavier weights (>150 kg).

### Materials and Methods

Individually fed pigs ( $n = 72$ ; 36 barrows, 36 gilts;  $28.55 \pm 1.16$  kg) were randomly assigned to 12 dietary treatments in a  $2 \times 6$  factorial arrangement. Fat treatments were tallow and corn oil (5?). The vitamin E treatments included four levels of  $\alpha$ -tocopheryl-acetate (ATA; 11, 40, 100, and 200 ppm) and two levels of mixed tocopherols (primarily  $\gamma$ -tocopherol; 40 and 100 ppm). Pigs were humanely slaughtered at approximately 150 kg. 45 min pH was taken at the 10th rib. After 24 h chill (4°C), carcass measurements were taken (carcass length, backfat depth at first rib, last rib, 10th rib and last lumbar, loin muscle area, and 24 h pH at the 10th rib). In addition, wholesale weights from the Boston butt (IMPS #406), shoulder picnic (IMPS #405), loin (IMPS #412), and belly (IMPS #408) and spare-ribs were recorded. Furthermore, bellies were divided into eight sections and the average depth was taken at each section and the vertical and lateral belly flex was measured. Drip loss was determined by suspending a 1.3cm chop at 4°C for 48 h and purge loss was determined from approximately 2kg vacuum packaged loin muscle sections at 0, 7, 14, and 30d. Objective (Hunter

Lab Colorimeter XE Plus) and subjective (NPPC color, marbling and firmness scores) measurements were taken at the 10th rib. Data analysis were performed in SAS by least squares analysis of variance using the generalized linear model as a randomized complete block design. The individual pig served as the experimental unit and results were reported as least square means.

### Results

There were no differences in dressing percentage, 24 h pH, backfat depth, loin muscle area, primal cuts, purge loss, and drip loss between the two vitamin E isoforms. Fat treatments did not affect dressing percentage, 45 min and 24 h pH, backfat depth, loin muscle area, primal cuts, purge loss, drip loss as well as objective and subjective color. Although not significant ( $P = 0.07$ ), pork from the  $\gamma$ -tocopherol pigs had a lower pH than the ATA treatment. The  $\gamma$ -tocopherol supplementation tended to have a lighter subjective color ( $P = 0.06$ ) as well as increased  $L^*$ , decreased  $a^*$ , and increased the hue angle calculations at 7d shelf-life. The belly depth was greater ( $P = 0.01$ ) along with higher lateral ( $P < 0.01$ ) and a lower vertical ( $P < 0.01$ ) flex for pigs fed tallow.

### Conclusion

In conclusion, feeding tallow to heavy weight pigs (150 kg) could improve belly firmness. Also,  $\alpha$ -tocopherol did not improve shelf-life stability and  $\gamma$ -tocopherol could negatively affect subject and objective pork loin color.