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Relationships between Early Postmortem and Aged Pork Loin Quality Characteristics of Barrows and Gilts

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Objectives

Pork loins are often sorted during fabrication of carcasses based on visual appraisals of color, marbling and firmness, but it is unclear whether these early postmortem traits are related to quality traits observed by consumers. Furthermore, it is also unknown whether the relationships between early and aged postmortem quality differ between barrows and gilts.

The objectives were to 1) determine correlations between early postmortem loin quality characteristics and aged loin quality characteristics, and 2) determine if those relationships differed between barrows and gilts.

Materials and Methods

Early and aged loin quality evaluations were collected on 133 barrows and 195 gilts killed on 3 different days. Pigs were transported approximately 195 km to a commercial slaughter facility and held in lairage for a minimum of 3 h. Pigs were immobilized via carbon dioxide gas, and carcasses were blast chilled for 90 min. Loin pH and back fat thickness were measured at the midline of the 10th rib. Early quality measures (1 d postmortem) included 1 d postmortem pH, instrumental color (L^* , a^* , b^*), and subjective color, marbling, and firmness from the ventral surface of boneless loins. Loins were vacuum-packaged and aged 14 d at 4°C. Then, loins were removed from packaging, exposed to oxygen, and reevaluated on the ventral surface for the same loin quality traits (aged quality). Aged loins were sliced into 25 mm thick chops, allowed to bloom, and color measurements were taken from the chop-face. Chops were cooked to an internal temperature of 68°C for Warner Bratzler shear force (WBSF) and cook loss. Pooled correlations between sexes for early postmor-

tem and aged quality characteristics were calculated using the CORR procedure of SAS (SAS Inst. Inc., Cary, NC). To assess differences in relationships between barrows and gilts, comparison of independent correlation coefficients was conducted. Correlations were considered different from 0 and relationships between barrows and gilts were considered different at $P \leq 0.05$.

Results

Barrows were heavier, fatter, and had loins that were lighter as a percentage of HCW compared with gilts ($P \leq 0.01$). One d postmortem pH was correlated ($P \leq 0.01$) with aged ventral color ($r = 0.46$), aged chop color ($r = 0.42$), cook loss ($r = -0.33$) and WBSF ($r = 0.16$). However, these relationships did not differ ($P \geq 0.11$) between barrows and gilts. Early ventral L^* was correlated to aged ventral L^* ($r = 0.55$) and WBSF ($r = -0.24$), but not with chop L^* ($r = 0.06$) or cook loss ($r = 0.05$). Early ventral a^* was correlated to aged ventral a^* ($r = 0.17$), chop a^* ($r = 0.28$), and cook loss ($r = -0.25$), but not with WBSF ($r = -0.04$). None of these relationships differed ($P \geq 0.41$) between barrows and gilts.

Conclusion

One d postmortem pH was correlated with color, water-holding capacity, and tenderness. Early ventral color measurements were correlated with aged ventral color measurements and tenderness, but not with chop color. Therefore, 1 d postmortem pH, L^* , and a^* could be used as indicators of aged color and tenderness. Given that there were no differences in early and aged postmortem relationships between barrows and gilts, sex does not need to be accounted for when using these early quality traits to predict aged quality.