2018 Reciprocal Meat Conference – Meat and Poultry Quality

Meat and Muscle Biology™

Correlation of Chicken Breast (Pectoralis Major) Quality and Sensory Attributes with Chicken Thigh Quality and Sensory Attributes

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Objectives

In other meat commodities, the relationship between quality and eating experience of different cuts within the same carcass has garnered significant attention. While the poultry industry typically prioritizes lean growth and less information is available about the relationship of quality and sensory attributes of different cuts throughout the carcass, it is imperative to commit research efforts to better understand these relationships. Therefore, the purpose of this study was to characterize the relationship between chicken breast (*pectoralis major*) quality and sensory attributes with chicken thigh quality and sensory attributes.

Materials and Methods

Chickens of 5 different genetic strains were slaughtered at a common ending point at a commercial processing facility in Southern Ontario and chilled using immersion chilling. Fifty whole chicken carcasses were fabricated into a 9-piece fabricated chicken according to North American Meat Institute specifications. The chicken breast portion was further fabricated into a boneless, skinless breast and the chicken thigh portion was further fabricated into a boneless, skinless thigh. Immediately following fabrication, right side breast and thigh samples were assessed for pH, instrumental color (L*, a*, and b* using a Minolta colorimeter), and prepared for a 48-h drip loss evaluation. Sensory attributes (tenderness, juiciness, flavor, and acceptability) using a trained sensory panel and cooking loss were assessed on the breast and thigh samples from the left side of the carcass. The trained sensory panel had a pool of 12 panelists, 4 of which were used for each sensory session. Eight breast or thigh samples were served at each of the 10 sensory sessions. Correlation coefficients between traits were computed using the CORR procedure of SAS (SAS Inst. Inc., Cary, NC) and considered significantly different from 0 at $P < 0.10$. Correlations were considered weak (in absolute value) at $r \leq 0.35$, correlations were considered moderate at $0.36 \leq r \leq 0.67$, and correlations were considered strong at $r \geq 0.68$.

Results

Only the parameters with correlation coefficients that were different from 0 ($P < 0.10$) were reported. Breast pH was weakly correlated ($r = 0.25$; $P = 0.07$) with thigh pH, breast color (L*, a*, and b*) was weakly correlated ($r \leq 0.30$; $P \geq 0.04$) with thigh color, and breast 48-h drip loss was weakly correlated ($r = 0.35$; $P = 0.01$) with thigh 48-h drip loss. Breast sensory tenderness was moderately correlated ($r = 0.38$; $P < 0.01$) with thigh sensory tenderness, while all other sensory parameters measured between breast and thigh samples were not significantly correlated ($P \geq 0.24$). Breast sensory acceptance was strongly correlated with breast sensory juiciness ($r = 0.86$; $P < 0.01$) and moderately correlated with breast sensory tenderness ($r = 0.53$; $P < 0.01$) and breast sensory flavor ($r = 0.66$; $P < 0.01$). Thigh sensory acceptance was strongly correlated with thigh sensory juiciness ($r = 0.80$; $P < 0.01$) and moderately correlated with thigh sensory tenderness ($r = 0.52$; $P < 0.01$) and thigh sensory flavor ($r = 0.62$; $P < 0.01$).

Conclusion

Breast quality and sensory attributes were generally weakly correlated with thigh quality and sensory attributes. Further investigation into factors affecting breast and thigh quality parameters (pH, color, drip loss, and cooking loss) and their effect on sensory attributes are warranted.