Effects of Pork Quality and Cooked Temperature on Consumer and Trained Sensory Perception of Eating Quality in Non-enhanced and Enhanced Pork Loins

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Objective

Evaluate four key quality measures influence on eating quality

- Fresh pork Color (Minolta L*)
- Intramuscular fat (IMF)
- Ultimate pH (pH)
- Cooked pork Warner Bratzler shear force (WBS)
Evaluated enhanced and non-enhanced pork loin chops

Evaluated at 4 end point cooking temperatures, 145° F, 155° F, 165° F, and 175° F.
Methods

Trained sensory and Consumer Panels

Consumer testing was conducted in Chicago, Philadelphia and Sacramento, targeting 760 consumers within each test market. A total of 2280 consumers evaluations.

Trained sensory testing was conducted at Texas A&M University and Iowa State University
All evaluation were conducted under Red light.

Consumers responses were assessed on a 8 point scale with 1 being very unfavorable and 8 being very favorable.

Loins were collected from cooperating U.S. packing plants.

Collection methods designed to capture variation needed for study.
Samples loins were collected to populate each cell, across the feasible range of each attribute.

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Results

Shear force and loin pH were the two primary pork quality attributes that influenced perceptions of pork eating quality.

As WBS increased, consumer ratings for tenderness, juiciness, and overall-like decreased.

Increasing loin pH showed favorably improved responses for tenderness and juiciness ratings.

In general, lower cooking temperatures were preferred over higher.
Results

- Enhancement improved consumer perceptions of eating quality even at a low cooked temperature.
- The additive influence of enhancement allowed enhanced chops to have greater mean ratings for tenderness at greater levels of WB.
- Consumer and Trained Panel results were similar.
- Data set from this research is very rich, and additional analysis may yield further useful results.
Effects of Enhancement on Consumer Likeability

Overall Likeability

Enhanced

Non-enhanced

145º F  Internal Temperature  175º F
Implications

- pH is more predictive of overall consumer like than color
- Low pH product (<5.6) would benefit the most from enhancement - leads to the need to develop method and procedure to sort
- Industry focus on developing practical methods for measuring tenderness at the processing plant
Consumers that purchase Natural Pork, non-enhanced, may need more education on cooking methods

Industry focus on developing practical methods for measuring tenderness at the processing plant - research and development of methods and instrumentation to measure pH at line speeds
Questions?