

Intramuscular Fat Benchmarking and Sensory Evaluation



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Problem:

There is currently a limited understanding of intramuscular fat (IMF) as a key determinant of eating quality in pork, which may stem from the contemporary low values of pork IMF. While some studies suggest that higher IMF levels positively impact sensory flavor and juiciness, findings across different studies vary. Although nutritional and genetic factors can be leveraged to manipulate IMF, the absence of baseline IMF data across diverse supply chains in Australia creates uncertainty about the potential for enhancing pork eating quality through IMF manipulation. Identifying baseline IMF levels across various supply chains is crucial to increasing our understanding of viable opportunities to improve pork quality through targeted manipulation.

Project:

The project aimed to provide baseline data, investigating the impacts of season, supply chain, genetics, live weight, and cut on pork eating quality. Additionally, it sought to understand the relationships between IMF and consumer sensory measures related to the eating quality of pork.



Value for Industry:

Increased understanding of the baseline IMF percentages in Australian pork and the relationships between IMF percentage and eating quality provide the industry with a clearer vision of ways to increase eating quality through genetics and nutritional factors.



Outcomes:

The study's major findings indicate several key relationships and distinctions related to pork quality. IMF% and collagen solubility were shown to influence pork sensory properties. The Bolar Blade exhibited the highest pH, collagen and IMF content, this was supported by higher sensory ratings with higher tenderness, juiciness, and flavor scores compared to the silverside and loin. Interestingly, although silverside and loin differed in instrumental tenderness, consumers failed to detect a sensory tenderness distinction between the two cuts.

Seasonal effects on pork quality were observed, with winter pork being tougher and exhibiting higher collagen solubility. Castrated male pork displayed higher collagen solubility than female pork, although no significant difference in sensory properties was noted. Carcass weight showed no significant effects on IMF or sensory attributes, but consumers could differentiate between weight groups in Check-All-That-Apply (CATA) analysis. CATA analysis effectively differentiated between the bolar blade, the loin, and the silverside muscles, despite similar sensory scores for loin and silverside.

Furthermore, collagen solubility positively influenced instrumental and sensory tenderness, while collagen content had minimal impact on pork tenderness. IMF content significantly influenced pork texture, sensory juiciness, and overall liking, aligning with previous reports. The study also highlighted the relationship between pH and pork characteristics, although its impact on sensory attributes was not conclusively established. An important finding from the present study was that IMF% was positively associated with sensory eating quality even within the low range encountered. Overall, the project highlighted the complexity of the various combinations of factors influencing pork quality and consumer preferences.

More information

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