Poster session 01

GENETIC ANALYSIS OF MEAT QUALITY TRAITS IN TWO COMMERCIAL CUTS IN *AVILEÑA NEGRA* IBERICA

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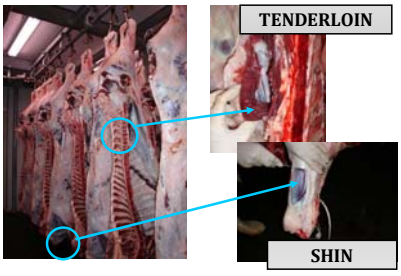
Objectives

1. Assessing meat quality differences between shin and tenderloin, two commercial cuts with large differences in market value.
2. Estimating the genetic variability associated to meat quality traits.
3. Determining the existence of heterogeneous variability associated to both cuts, whose muscles have different metabolic and functional profiles.

Material and Methods

Data:
Samples of tenderloin (400 calves) and shin (400 + 312 calves) were collected. Animals were fed in 17 fattening places controlled by the Breed Association.



Characteristics related to meat quality (***y***):

- Intramuscular fat
- Cholesterol
- Collagen
- Protein
- Dry matter content
- Colorimeter readings (L, a*, b*)
- Warner Bratzler shear force
- Thawing and cooking losses
- pH

Model:
Univariate repeatability animal models accounting for both homogeneous and heterogeneous residual variances regarding the commercial cuts:

$$\mathbf{y} = \mathbf{Xb} + \mathbf{Z}_u\mathbf{u} + \mathbf{Z}_p\mathbf{p} + \mathbf{e}$$

- Fattening place and year combination
- Fattening period (days)
- Fattening season
- Slaughter age
- Slaughterhouse
- Commercial cut

- Animal genetic effect

- Permanent effect

Model comparison criteria:

Goodness of fit:

Bayes Factor: Newton and Raftery approach (1994)

Predictive ability:

Leave-one-out crossvalidation

Results

Parameter estimation:

- Meat quality differences were quantified.
- Relevant genetic variability was found. Posterior means of the heritabilities were low for all traits (0.01-0.13), except for pH (0.16-0.18).
- Shin was more variable than tenderloin (HPD90%) for cholesterol, protein, L*, color a* , Warner Bratzler shear force and cooking losses, whereas tenderloin was more variable for intramuscular fat , dry matter and thawing losses. Residual variances regarding cut for color b, collagen and pH were similar.

Goodness of fit:

Heterocedastic model preferred for:	Homocedastic model preferred for:
• Intramuscular fat	• Cooking losses
• Cholesterol	• Color b*
• Collagen	• pH
• Protein	• Protein
• Dry matter content	
• Warner Bratzler shear force	
• Thawing losses	
• Color a*	
• L*	

Predictive ability:

- Similar predictive ability of both models for all traits.

Conclusions

- Shin and tenderloin, with different metabolic and functional profiles, showed large differences in meat quality attributes.
- More research is needed to understand the nature of the heterogeneous residual variance between muscles with different profiles, and its implication in the selection for the meat quality.

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