



RESEARCH BRIEF PRODUCT QUALITY

BEEF RESEARCH

Effects of United States Department of Agriculture carcass maturity on sensory attributes of steaks produced by cattle representing two dental age classes

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Abstract

This study examined the effects of USDA carcass maturity on sensory properties of LM steaks produced by cattle representing 2 dental age classes. Carcasses identified for use in the experiment were produced by steers and heifers classified as either <30 mo of age (MOA) or ≥30 MOA at the time of slaughter using dentition. Within each dental age class, carcasses were selected to represent 2 maturity groups and 3 marbling categories, resulting in 12 dental age × maturity × marbling subclasses, each consisting of 50 carcasses. Maturity groups consisted of carcasses classified by USDA graders as either A00 to A99 (A) overall maturity or B00 to D99 (B-D) overall maturity; marbling categories consisted of carcasses with instrument marbling scores of Slight00 to Slight99 (SL), Small00 to Small99 (SM), or Modest00 to Moderate99 (MT-MD). Carcasses were selected in pairs so that each carcass chosen to represent the B-D–maturity group was paired with an A-maturity carcass of the same sex and marbling score (±50 marbling units). Strip loin (LM) steaks were obtained from both sides of each carcass. After a 14-d aging period, 1 LM steak was measured for Warner–Bratzler shear force (WBSF) and slice shear force (SSF), whereas the other LM steak was used for sensory analysis by a trained descriptive attribute panel. No differences ($P > 0.05$) in LM tenderness, juiciness, or flavor were detected between carcass maturity groups in either dental age class. Advanced dental age (≥30 MOA), however, was associated with more intense ($P < 0.05$) grassy and bloody/serummy flavors and decreased ($P < 0.05$) tenderness within the SL marbling group. Marbling score effectively stratified carcasses (MT-MD > SM > SL) according to differences ($P < 0.0001$) in LM tenderness, juiciness, beefy/brothy flavor, and buttery/beef fat flavor. In addition, increased marbling was associated with lesser ($P < 0.01$) intensities of bloody/serummy, livery/organy, and grassy flavors as well as smaller ($P < 0.0001$) values for WBSF and SSF. Results of this study suggest that USDA carcass maturity does not effectively identify differences in LM sensory attributes in the population of beef carcasses routinely offered for grading in today's U.S. commercial beef processing facilities.

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