

2017 Reciprocal Meat Conference – Consumer Topics

Meat and Muscle Biology™



Identifying Consumer Preference for Beef Raised with Different Production Systems

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Keywords: beef, consumer, meat quality, shares of preference, technology
Meat and Muscle Biology 1(3):4

doi:10.221751/rmc2017.004

Objectives

Objectives of this study were to 1) evaluate meat quality characteristics, and 2) identify consumer palatability and label preferences for beef raised in different production systems.

Materials and Methods

Beef striploins ($n = 72$) were collected from cattle raised using 4 different production systems: 1) no technology (NA; no antibiotics or growth promotants); 2) non-hormone treated (NHTC; NA plus therapeutic antibiotics); 3) implant (IMPL; NHTC plus implants); and 4) implant plus a β -agonist (IMBA; IMPL plus ractopamine-HCl). Cattle were slaughtered at a commercial facility and marbling scores were obtained prior to striploin collection. During fabrication the anterior end of striploins were squared off and the slice removed was frozen for analysis of percent crude fat. Steaks (2.54 cm) were fabricated from striploins, vacuum packaged, aged 14 d, and designated for WBSF and consumer panel analysis. To determine the influence of production information on consumer preferences, untrained consumer panelists ($n = 105$) were recruited from the surrounding areas of St Paul, MN for 3 consecutive panels: Blind (Panel 1; samples provided with no production information); Disclosed without Meat (Panel 2; only the production description provided); and Disclosed with Meat (Panel 3; samples and production description provided). Panelists were fed repeated samples of each of the 4 treatments and were instructed to identify their most and least preferred sample. The relative preference of each sample was analyzed to determine percent share of preference (SOP) per treatment for comparison using a percentage scale.

Results

The marbling score and ether extractable fat percentage of NA and NHTC did not differ ($P > 0.05$) but were greater ($P \leq 0.05$) than IMPL and IMBA, which were similar ($P > 0.05$). Steaks from NA and NHTC treatments did not differ ($P > 0.05$) for WBSF though were more tender ($P \leq 0.05$) than IMPL and IMBA, which were not different ($P > 0.05$). Percent cook loss was reduced ($P \leq 0.05$) for NHTC versus IMPL and IMBA which were not different ($P > 0.05$). Further, a reduction ($P \leq 0.05$) in percent cook loss was detected for NA compared to IMPL but did not differ ($P > 0.05$) from IMBA. In Panel 1, when no information was provided, NA was most preferred ($P \leq 0.05$) and IMBA was least preferred ($P \leq 0.05$) while NHTC and IMPL were intermediate and similar ($P > 0.05$). When asked to select the most and least preferred production descriptions in Panel 2, all SOP differed ($P \leq 0.05$) with NA most preferred followed by NHTC, IMPL, and IMBA. All samples differed ($P \leq 0.05$) when information was disclosed and meat was consumed in Panel 3 but NHTC was most preferred followed by NA, IMPL and IMBA. Pairwise comparisons between Panel 1 and 3 revealed that disclosing production information resulted in a lift ($P \leq 0.05$) in SOP for NA and NHTC and a decline ($P \leq 0.05$) for IMPL and IMBA.

Conclusion

Treatments utilizing growth promoting implants with and without β -agonist increased WBSF, which may be detectable by untrained consumer panelists as natural treatments captured greater SOP in both blind and disclosed panels. When production information was disclosed and palatability was assessed, NHTC was the most preferred followed by NA, indicating that when information is provided consumers are accepting of meat from an animal that may have been treated with an antibiotic in the event of illness.