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Grilling Temperature Effects on Trained Sensory Panel and Warner Bratzler Shear Force of USDA Select Beef Striploin Steaks

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Objectives

The objective of this study was to evaluate the trained sensory panel and Warner-Bratzler shear force (WBSF) responses to 5 different grilling temperatures on USDA Select strip steaks.

Materials and Methods

Thirty USDA Select strip loins were collected from a major packing plant where carcass data was collected, then aged for 14 d. After aging, 10 steaks were cut 2.54 cm thick from each loin, randomized among 1 of 5 treatment grill surface temperatures (149°C, 177°C, 204°C, 232°C, or 260°C), and given a WBSF or trained sensory panel designation. Steaks were individually vacuum-packaged and placed in frozen storage until analyses were performed. Individual steaks were thawed in refrigerated storage (4°C) for 12 to 24 h prior to cooking. Steaks were cooked on a commercial flat top grill, preheated to the designated grill surface temperature treatment. All steaks were cooked to an internal end point temperature of 71°C, turning once at 35°C. Six, 1.3 cm diameter core samples were collected from each WBSF steak after being refrigerated (4°C) overnight. Steaks designated for trained panel were cut into 1.3cm cubes and served, warm, to an expert trained beef flavor de-

scriptive panel. Each steak was evaluated on a 16-point intensity scale for 18 flavor attributes, tenderness, and juiciness. Data were analyzed using the GLM procedure in SAS with significance set at an α value < 0.05 , where grilling temperature served as the main effect and loin, panelists, day, and serving order served as covariates. The LSMeans procedure in SAS (SAS Inst. Inc., Cary, NC) was used to separate significant means ($P < 0.05$).

Results

Warner-Bratzler shear force values were not affected ($P > 0.05$) by grill temperature and were generally low (mean WBSF = 3.1779 kg). At lower grill temperatures, beef identity, brown, roasted, burnt, and bitter were lower ($P < 0.05$) and bloody/serumy, sour, and juiciness were higher ($P < 0.05$). As grill temperatures increased, bloody/serumy, sour, and juiciness were lower ($P < 0.05$) and beef identity, brown, roasted, burnt, and bitter were higher ($P < 0.05$).

Conclusion

Grill surface temperature can be used to change beef flavor trained sensory panel scores, but has no impact on tenderness.