CONSUMER PALATABILITY OF AUSTRALIAN GRASS- AND GRAIN-FED SMOKED BEEF RIBS

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I. OBJECTIVES

The objective of this study was to identify the effects of grade, diet (grass vs. grain), muscle, and hold time on the consumer palatability of smoked beef ribs.

II. MATERIALS AND METHODS

Beef ribs of varying quality grades (2, 3, 4, 5) were collected from 2 commercial abattoirs in Australia, equally representing grass- and grain-fed carcasses. The subprimals were then vacuum packaged, frozen at 3 d postmortem, and shipped frozen to Texas Tech University in Lubbock, Texas. Upon arrival, the ribs were sorted into cook batches and returned to frozen storage (−20°C). Prior to cooking, ribs were thawed, excess external fat was trimmed, and ribs were lightly seasoned with salt and pepper. On their designated testing day, ribs were placed in electric pellet smokers (Green Mountain Grills set to 120°C) and cooked until reaching an internal temperature of 93.3°C. After removal from the smoker and resting for at least 30 min, the rib meat was deboned and separated into *intercostales externus et internis* (INT), as well as chuck and rib portions of the *serratus ventralis* (SV). The samples were allocated to serve time treatment. Half of the samples were held warm (~60°C) and fed to consumers; the other half were vacuum packaged, refrigerated for 7 d, reheated, and served the following week. Hot and reheated samples were fed to consumers and evaluated for tenderness, juiciness, flavor liking, overall liking, and satisfaction. Consumer data were analyzed to determine the effects of Meat Standards Australia (MSA) grade, diet, muscle, serve time (hot vs. reheat), and their interactions. Only MSA grade × diet remained in the model as a fixed effect ($P < 0.05$).

III. RESULTS

There was an interaction ($P < 0.01$) between quality grade and diet for all palatability attributes and consumer satisfaction scores. Grass-fed samples from grade 2 (lowest) carcasses were scored lower ($P < 0.05$) than their grain-fed counterparts for all traits. Tenderness was greater ($P < 0.05$) for grass-fed samples from grade 3 carcasses compared to grain-fed samples, but all other palatability traits were similar for grade 3 carcasses. Flavor liking, overall liking, and satisfaction were greater ($P < 0.05$) for grade 4 grass-fed carcasses compared to grain fed, but the opposite trend was observed for grade 5 (highest grade) carcasses, where grain-fed samples were preferred ($P < 0.05$). Additionally, consumers were able to distinguish ($P < 0.01$) between muscle for all palatability traits and consumer satisfaction. The SV rib portion was scored greater ($P < 0.05$) for all traits compared to the SV chuck portion or INT. The SV chuck portion was scored greater ($P < 0.05$) for flavor and overall liking and satisfaction compared to INT, but those samples did not differ for tenderness or juiciness. Panelists also noted a difference in serve time for juiciness, flavor liking, overall liking, and consumer satisfaction ($P < 0.01$), where hot samples were scored more favorably than reheated samples.

IV. CONCLUSION

Quality grade and diet interacted to affect the eating quality of smoked beef ribs, with inconsistent trends between MSA grade depending on the diet. The palatability of the posterior end of the SV was preferred by consumers compared to the anterior portion and to the rib fingers, when prepared using a smoked cookery method. Samples served hot were scored more favorably for all palatability traits, except tenderness, compared to reheated samples.

Keywords: beef ribs, consumer, palatability, quality grade, smoking