

2018 Reciprocal Meat Conference – Consumer Topics

Meat and Muscle Biology™



The Effect of Grilling or Roasting Cook Methods on Consumer Assessments of Eating Quality in the United States and New Zealand

E. S. Beyer^{1*}, A. J. Garmyn¹, M. F. Miller¹, T. G. O'Quinn², J. C. Brooks¹, R. J. Polkinghorne³, and K. S. Spivey¹

¹Texas Tech University, Lubbock, TX, 79409, USA; ²Kansas State University, Manhattan, KS, 66506, USA; ³Birkenwood International, Melbourne, VIC 3122, Australia

*Corresponding author. Email: erin.beyer@ttu.edu (E. S. Beyer)

Keywords: beef, consumer, cook method, country, palatability
Meat and Muscle Biology 2(2):6

doi:10.221751/rmc2018.006

Objectives

Consumer assessment was conducted in 2 countries using 2 cook methods to determine if eating quality differed based on location or cook method for 6 muscles.

Materials and Methods

Consumers in the United States (US; $n = 480$) and New Zealand (NZ; $n = 480$) evaluated grilled or roasted beef according to Meat Standards Australia testing protocols under the 503510 (US) and 503743 (NZ) ethic codes. Subprimals were collected at 2 commercial abattoirs in New Zealand and were aged 7 to 10 d postmortem. Before subprimals were fabricated into steaks or roasts, secondary muscles were removed leaving the *triceps brachii* (TB), *semitendinosus* (ST), *psoas major* (PM), *infraspinatus* (IF), *rectus femoris* (RF), and *gluteus medius* (GM). Muscles were fabricated so samples for grilling and roasting in both countries were obtained from each muscle. The denuded muscles were sliced into 2.5-cm steaks or $15 \times 7.5 \times 7.5$ -cm roasts, vacuum packaged and frozen at -20°C . Paired samples representing each cook method were divided between NZ and the US. Consumers scored each sample for tenderness, juiciness, flavor liking, and overall liking using 100-mm line scales for each trait. Data were analyzed using PROC GLIMMIX in SAS (SAS Inst. Inc., Cary, NC) by muscle to determine if the fixed effects of country or cook method influenced eating quality ($\alpha = 0.05$).

Results

Country and cook method interacted ($P \leq 0.05$) to influence all traits for ST as liking preference between cook methods depended on the country for tenderness, and fla-

vor, but the overall liking preference of the roast depended on the country. Country influenced ($P \leq 0.03$) tenderness for TB, IF, RF, GM, and PM, with US consumers rating each more tender than NZ consumers. Cook method affected ($P < 0.01$) tenderness of GM and PM, with roasts scoring lower than steaks. Country influenced flavor for TB only ($P < 0.01$), as US consumers liked TB flavor less than NZ. Roasting had a negative effect on flavor liking of IF and PM compared to grilling ($P < 0.01$). Country and cook method interacted ($P \leq 0.05$) to influence flavor liking for RF and GM. Roasts were scored lower for flavor by NZ consumers, but US consumers scored flavor similarly, regardless of cook method of the 2 muscles. An interaction between country and cook method was observed ($P = 0.04$) for juiciness of ST and RF. Otherwise, country influenced ($P \leq 0.01$) juiciness for all muscles except TB with US consumers rating each juicier than NZ consumers. Cook method also affected ($P < 0.01$) juiciness for all muscles except ST as roasts were scored lower than steaks. Overall liking was influenced by country ($P < 0.01$) for RF and GM only, where US consumers liked RF more than NZ consumers. Overall liking was also influenced by cook method ($P \leq 0.02$), where roasting had a negative effect on overall liking of IF, RF, and PM compared to grilling.

Conclusion

Consumers in NZ and US became most divergent when assessing tenderness and juiciness compared to the other traits, as US consumers typically rated beef samples more tender and juicier than NZ consumers. Fewer differences between countries existed for flavor and overall liking. Additionally, grilling had a positive effect on juiciness, regardless of country, but had a reduced effect on tenderness and flavor liking since it only influenced 2 of the 6 muscles for those traits.