



## The Influence of Time and Temperature at Carcass Boning on the Consumer Assessment of Eating Quality of New Zealand Beef

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### Objectives

A consumer sensory panel was conducted to compare the palatability traits of New Zealand beef muscles that were either conventionally chilled or hot boned.

### Materials and Methods

Forty carcasses were selected initially for the study. Sides from each carcasses were randomly assigned to either conventional chilling (CB) or hot boning (HB). Five subprimals were removed including the strip loin, cube roll, tenderloin, rump, and topside. Accessory muscles were removed from each subprimal leaving only the *longissimus lumborum* (LL), *longissimus thoracis* (LT), *psaos major* (PM), *gluteus medius* (GM), and *semimembranosus* (SM). HB muscles were removed within 90 min of slaughter. The CB sides were chilled overnight prior to fabrication. Subprimals were fabricated into 2.5 cm steaks and were appointed to one of three postmortem aging periods (7, 21, or 35 d). Steaks were cooked on a Silex clamshell grill (Model S-143K, Silex Grills Australia Pty Ltd., Marrickville, Australia) with a temperature set at 225°C for a predetermined time and rested 3 min prior to serving. Consumers rated tenderness, juiciness, flavor liking, and overall liking on 100- mm line scales. A total of seven samples were served to each consumer. Data were analyzed by muscle as a split plot design using the GLIMMIX procedure of SAS (SAS Inst. Inc., Cary, NC) with chilling treatment as the whole plot fixed effect and postmortem aging as the sub plot fixed effect. Carcass was included as a random effect. Treatment least squares means were separated using the PDIFF option ( $P < 0.05$ ).

### Results

No 2-way interactions for chilling treatment or aging were observed for any consumer eating quality traits. Chilling treatment did affect tenderness, juiciness, and overall liking of the LT with CB being greater ( $P < 0.02$ ) HB. Chilling treatment also affected the tenderness, flavor, and overall liking of the PM as CB was greater ( $P < 0.01$ ) compared to HB. Finally, chilling treatment affected the SM for tenderness, juiciness, flavor, and overall liking; however, unlike the LT and PM, consumers scored HB SM greater ( $P < 0.01$ ) than CB SM. Chilling treatment had no effect ( $P > 0.01$ ) on the tenderness, juiciness, flavor, and overall liking of the GM or LL. In addition, postmortem aging affected tenderness of LT and SM with 21 d and 35 d being rated greater ( $P < 0.05$ ) than 7 d samples. Postmortem aging also affected ( $P < 0.05$ ) the tenderness, juiciness, flavor liking, and overall liking of the LL with consumers scoring 35 d samples most favorably, 21 d intermediate, and 7 d the lowest. Postmortem aging did not affect ( $P > 0.05$ ) the tenderness, juiciness, flavor liking, or overall liking of the GM or PM.

### Conclusion

These results indicate that chilling treatment and postmortem aging had an impact on eating quality, but these results varied by muscle. Based on consumer evaluations of these five muscles, hot boning is not recommended for LT or PM due to the reduction of eating quality scores for these subprimals; however, hot boning and early removal of muscles like the SM benefited from an eating quality standpoint and was neutral for the strip loin and rump. Processors must weigh the benefits and disadvantages hot boning may have on a subprimal basis when determining if this practice should be implemented in their facilities.