



US Consumer Assessment of Domestic Lamb Loins from 3 Marbling Levels Aged 21 or 42 Days

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Objectives

In the U.S., lamb is the red meat least consumed of the various species, with the average U.S. consumer eating less than one pound per year. However, it is highly consumed in many other countries throughout the world. The low level of consumption could be explained by the variability in the different palatability traits. Therefore, the objective of this study was to evaluate the effects of marbling level and postmortem aging on palatability of lamb loin chops as determined by U.S. consumers.

Materials and Methods

Full lamb loins (IMPS 232; 1 × 1) representing 3 distinct marbling levels [Low: 1 to 2% IMF; Medium (Med): 4–5%; High: 8+%] were obtained from a commercial lamb processor in Greeley, CO. Carcasses ($n = 180$ to 210; 60 to 70/treatment) were selected from each treatment. One side from each loin was aged to 21 d postmortem, while the other was aged until 42 d postmortem, resulting in a 3 (marbling) × 2 (aging) factorial design. Treatments were classified based on pork marbling standards (PMS) as low (PMS 1), intermediate (PMS 2) or high (PMS 3+), with marbling score being determined within seconds of carcass ribbing. Loins were fabricated at 21 d postmortem to remove tenderloins, bone, the flank and all other secondary muscles (gluteus medius), and external fat. Loins were trimmed of any visible external fat and connective tissue, manually fabricated into 2.5 cm thick chops, vacuum packaged, and stored at 2°C. After the appropriate aging period, chops were frozen at –20°C until further consumer

sensory analysis. Untrained consumers rated tenderness, juiciness, flavor liking and overall liking on 100 mm line scales. Data for sensory attributes were analyzed using the GLIMMIX procedure of SAS as a split plot design that included the fixed effects of marbling, aging and their interaction. Differences in least squares means were determined at an α level of 0.05.

Results

Based on previous research in pork and beef, we expected consumers would favor lamb loins with higher marbling levels and longer aging, resulting in higher scores for tenderness, juiciness, flavor, and overall liking. The interaction between marbling and aging was detected for tenderness ($P < 0.05$), resulting in greater scores for High 21 d than any other treatment. Consumers rated Med 42 d the least tender, but still very high on the rating scale (70.3 out of 100). Marbling affected ($P < 0.05$) both juiciness and flavor liking, but had no effect on overall liking ($P > 0.05$). For both traits, consumers scored High samples greater (juicier, liked more) than Med samples, but Low samples were similar to both. Aging influenced ($P < 0.05$) juiciness, flavor liking, and overall liking, resulting in greater scores for 21 d samples compared to samples aged 42d.

Conclusion

Overall, consumers preferred High marbling over Med marbling loin chops, but had difficulty distinguishing between Low and Med marbling lamb loin samples. Furthermore, additional postmortem aging of lamb loin is not recommended based on reduced scores for eating quality traits.