

Consumer Assessment of Domestic Lamb Loins from Three Marbling Levels Aged Twenty-one or Forty-two Days



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INTRODUCTION

- Lamb is one of the red meats, along with beef and pork, which is consumed in the U.S. and various countries around the world. In the U.S., lamb consumption is the lowest of the red meats.
- Consumption is generally lower than beef or pork due to lower availability, assumed flavor preferences for other red meat species, and perceived higher cost compared to other red meat species.
- Little research has been conducted investigating the eating quality of lamb using untrained consumer panelists, particularly investigating if consumers value higher marbling in lamb as they do in beef.
- Moreover, postmortem aging is commonly practiced in beef to improve tenderness, but little work has been done examining how consumers perceive tenderness of lamb loin aged for various postmortem periods.

OBJECTIVE

- The objective of this study was to evaluate the effects of marbling level and aging treatment on palatability of lamb loin chops as determined by U.S. consumers.

METHODS

- Full lamb loins (IMPS 232; 1 × 1) were obtained from a commercial lamb processor in Greeley, CO to represent 3 distinct marbling levels (low: 1-2% IMF; medium: 4-5%; high: 8+%). One 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.
- After the carcass chilling period (~24 h), carcass data, including marbling score and flanking streaking, was collected by trained TTU personnel, and loins were transported to Texas Tech University Gordon W. Davis Meat Science Laboratory.
- Carcasses (n = 180-210; 60-70/treatment) were selected from each treatment. Treatments were classified based on pork marbling standards (PMS) as low (PMS 1), intermediate (PMS 2) or high (PMS 3+).
- Loins were fabricated at 21 d postmortem. Both tenderloins were removed, followed by all bone. The longissimus dorsi from each side were excised from the flank, all secondary muscles (gluteus medius), and external fat.
- Loins were trimmed of any visible external fat and connective tissue. Right and left loins were assigned randomly to 21 d or 42 d postmortem aging within each marbling treatment.
- On d 21 postmortem, loins were manually fabricated into 2.54 cm thick chops and vacuum packaged and stored at 2°C. After the appropriate aging period, chops were frozen at -20°C until further consumer sensory analysis.
- Consumer rated each palatability trait on a 100 mm line scale.



RESULTS

An interaction between marbling and aging was observed ($P = 0.02$) for consumer tenderness ratings, where high marbling samples aged for 21 days were rated most tender, and medium marbling samples aged 42 were rated least tender. Aging influenced ($P < 0.05$) juiciness, flavor, and overall liking, with 21 d samples receiving greater scores than 42 d. Marbling impacted juiciness and flavor liking ($P < 0.05$), but had no effect on overall liking ($P > 0.05$). For both traits, high marbling was scored greater than medium, but neither differed from low marbling.

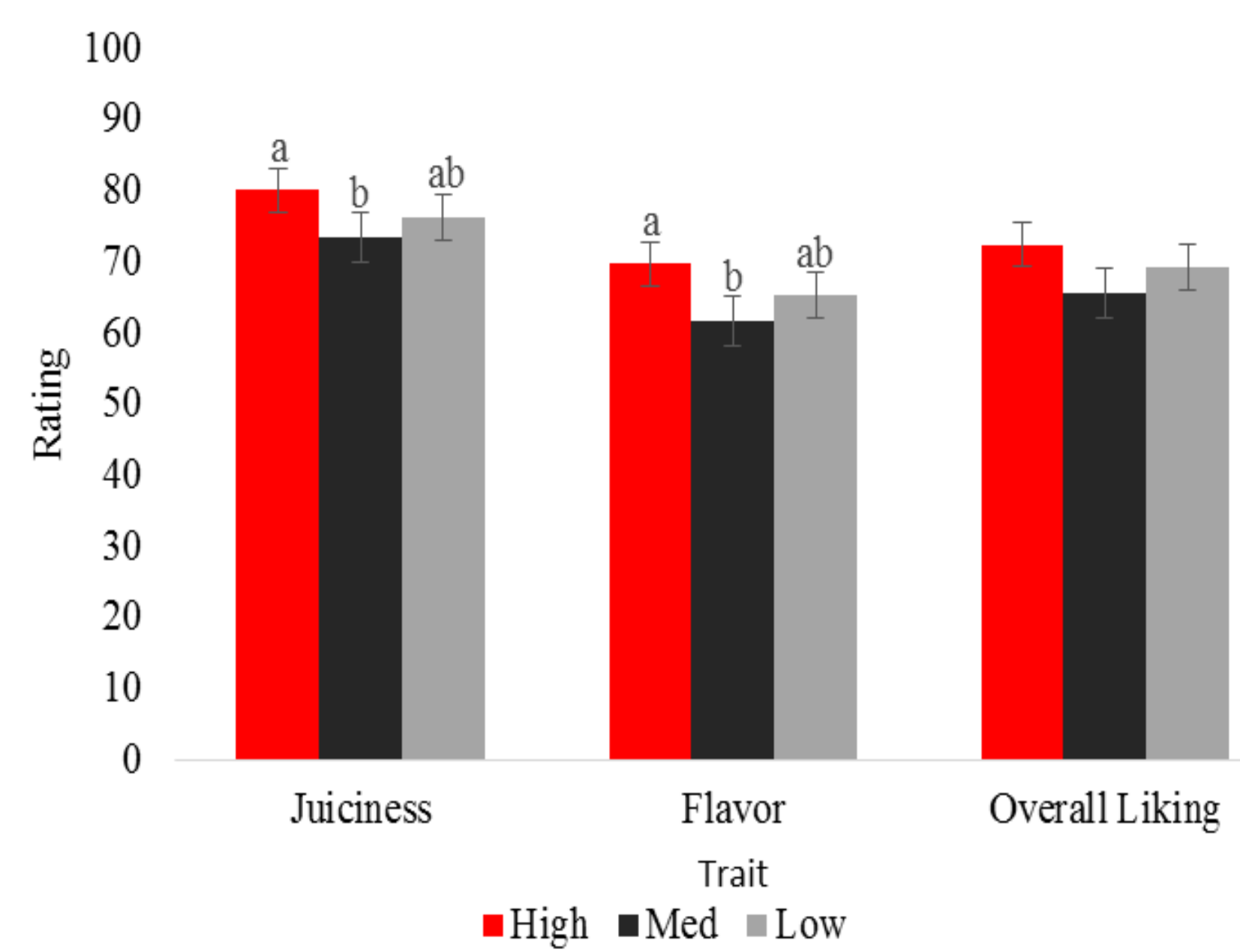


Figure 2 Consumer (n = 60) ratings for Juiciness, Flavor and Overall liking traits of lamb loin chops with different marbling levels.

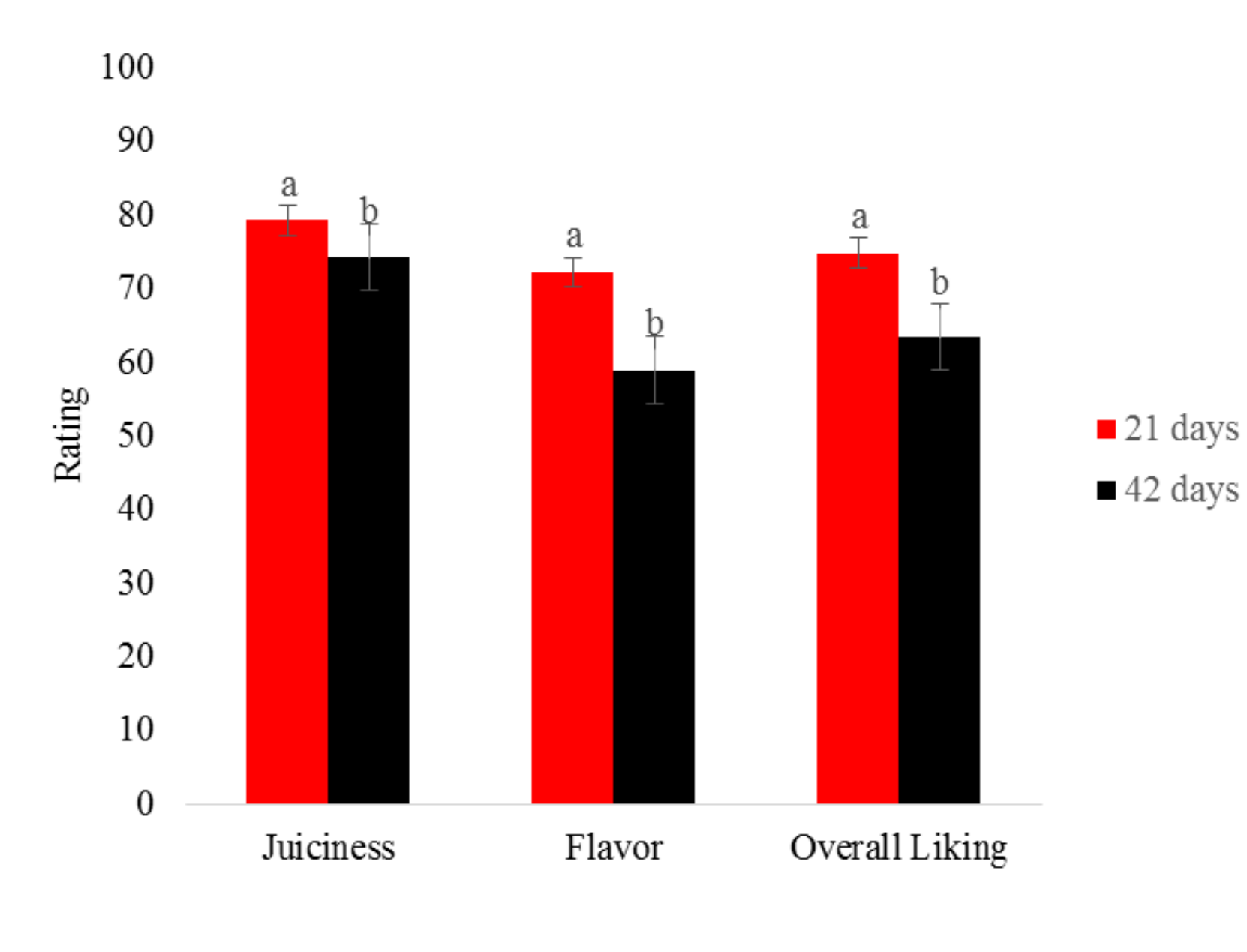


Figure 3 Consumer (n = 60) ratings for Juiciness, Flavor and Overall liking traits of lamb loin chops aged 21 or 42 days postmortem.

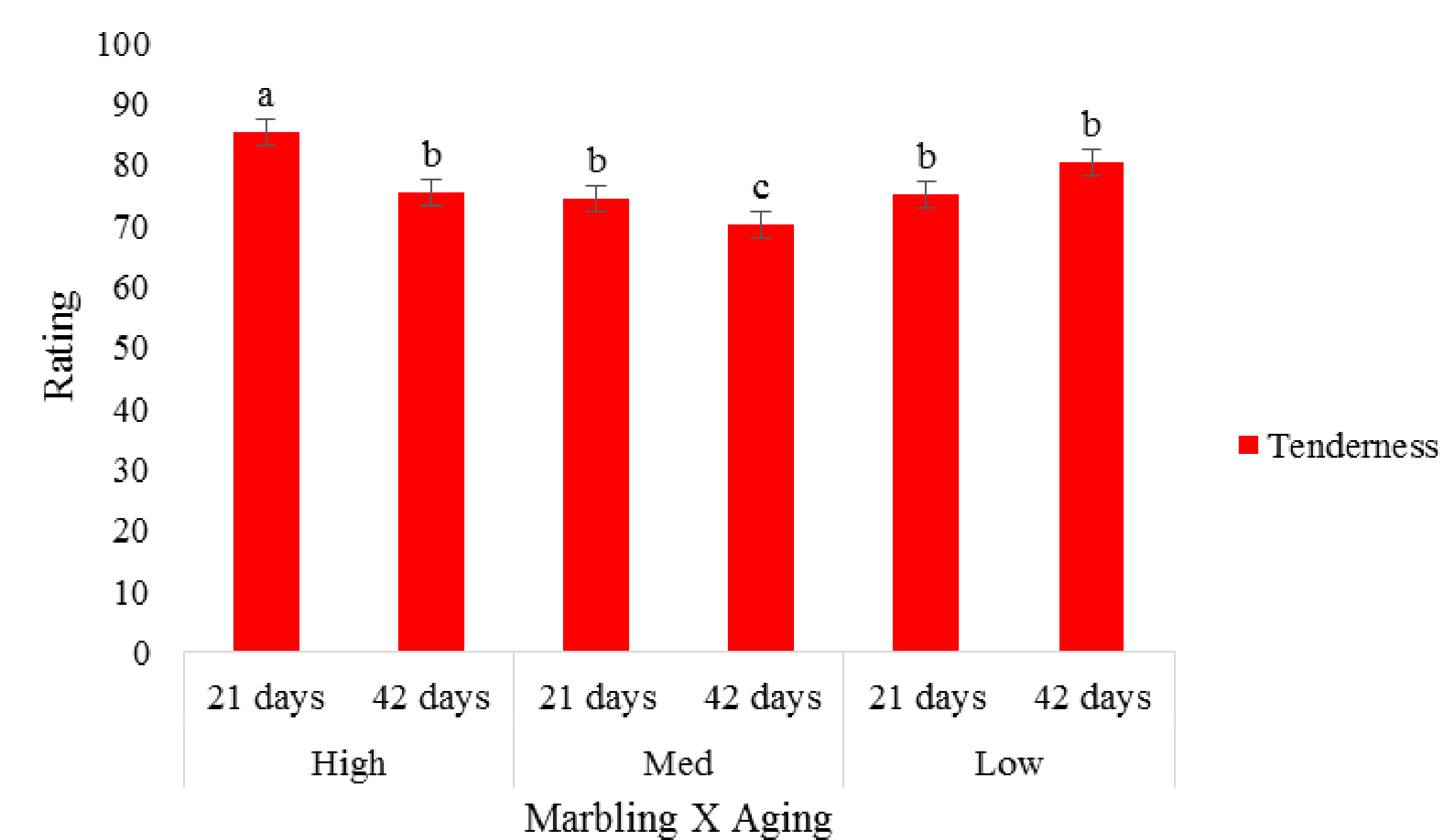


Figure 1 Consumer (n = 60) ratings for tenderness trait of lamb loin chops with distinct marbling levels aged 21 or 42 days postmortem.

CONCLUSION

Additional postmortem aging of lamb loin is not recommended based on reduced scores for eating quality traits. Consumers preferred high marbling over medium marbling loin chops, but had difficulty distinguishing between low and medium marbling lamb loin samples. Further research is warranted to see if consumers in Lubbock, TX react similarly to consumers in other regions around the country. Moreover, research evaluating eating quality of other lamb muscles is also warranted.

