

2017 Reciprocal Meat Conference – Meat and Poultry Quality

Meat and Muscle Biology™



The Effect of Animal Age on Cooked Lamb Flavor and Off Flavor Intensity in the Longissimus Dorsi, Gluteus Medius, and Ground Shoulder Patties from Wether Lambs

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Keywords: eating quality, lamb flavor, lamb off flavor
Meat and Muscle Biology 1(3):63

doi:10.221751/rmc2017.057

Objectives

Consumer acceptance of meat is dependent on 3 main factors: tenderness, flavor and juiciness. In 2017, lamb flavor continues to be seen by many American consumers to be unpleasant due to the species specific flavor profile of cooked lamb meat. As animals age and fat levels increase, flavors intensify. Would comparing younger lambs to older lambs, within the same lamb group (< 12 mo.) be more beneficial in regards to flavor intensities in lamb? Therefore, the objective of this study is to clearly define lamb flavor, and off flavor intensities of 3 ovine muscle cuts by studying age at time of harvest from wether lambs.

Materials and Methods

The *Longissimus dorsi thoracis* (LD), *Gluteus medius* (GM) and boneless square cut shoulder were collected from light weight 5 mo old ($n = 8$; 32.3 kg), and heavy weight 12 mo old ($n = 8$; 58.4 kg) wether lambs. Color values: L* (lightness), a* (redness), and b* (yellowness) were measured on *Longissimus dorsi thoracis* chops using a Minolta colorimeter. Muscle pH values was determined from a sample of the LD with the use of a bench top pH probe. Percent lipid concentration of the LD and ground shoulder were determined by similar procedures used by Fisher et al. (2013) with the use of soxhlet extraction. Muscle cuts were cooked using a clam shell grill, reaching an end temperature 65 °C, while ground shoulder patties were cooked to 71.1°C. Consumer panelists were asked to rate lamb flavor and off flavors intensity for each sample using a 0 to 100 scale, with 0 being mild flavor and 100 being very in-

tense flavor. Data was analyzed using a PROC MIXED model and LS means in SAS (SAS Inst. Inc., Cary, NC). Data was considered significant at $P < 0.05$.

Results

Lambs at 12 mo of age had heavier carcass weights ($P < 0.01$) than lambs at 5 mo of age. Twelve mo heavy weight lambs possessed a larger ribeye ($P < 0.05$) and had an increase in back fat and body wall thicknesses ($P < 0.01$) when compared to 5 mo, light weight lambs resulting in higher yield grades. No color differences ($P > 0.05$) were observed between treatments. Twelve mo old lambs had greater total lipid concentrations ($P < 0.05$) in the *Longissimus dorsi thoracis* ($P < 0.01$) and ground shoulder samples ($P < 0.05$) than 5 mo old light weight lambs. Consumer panelists reported a more intense lamb flavor ($P < 0.05$) and off flavor ($P < 0.05$) in the *Longissimus dorsi thoracis* from 12 mo old lambs when compared with 5 mo old lambs. However, there were no differences ($P > 0.05$) between 5 and 12 mo old lamb flavor and off flavor intensities in *Gluteus medius* and shoulder patty samples.

Conclusion

Upon reviewing the data, it is speculated that lambs harvested at 12 mo of age possessed greater lamb and off flavor intensities when compared with 5 mo old lambs. Therefore, consumers who desire a milder flavor lamb product should attempt to purchase younger lambs, while consumers who prefer more intense lamb flavor would choose older lamb. However, further investigations are required to prove this.