

SENSORY AND QUALITY DIFFERENCES OF PAIRED DRY-AGED LAMB LOINS

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I. OBJECTIVES

The objective of this study was to determine the flavor and texture differences between fresh and dry-aged lamb loin chops.

II. MATERIALS AND METHODS

Lambs ($n = 10$) of a contemporary group were fed a concentrate diet for 60 d prior to harvest. Carcasses (average 57.3 kg, 0.27 cm fat thickness) were halved, and loins were randomly assigned an aging treatment of no age (frozen day 0) or 14-d dry age (average temperature of 4°C, 55% relative humidity). Loins ($n = 20$) were frozen whole and shipped to College Station, Texas, for sensory analysis. Loins were cut into 1.9-cm thick-chops, labeled, and individually packaged. Samples were thawed in 4°C overnight and cooked to 71°C internal temperature on a flat-top electric grill. A 5-member sensory panel was trained on flavor and texture attributes specific to lamb with a 16-point intensity scale. The panel rated each sample individually and reported a consensus intensity score for each attribute. Representative cubes from sensory analysis were quick frozen for gas chromatography-mass spectrometry analysis. Samples (5.0 g) were broken into a scintillation vial, heated to 60°C using a heating block, and collected for 30 min with a Solid Phase Micro-Extraction fiber. Samples were run on a GC/MS and tentatively identified using the Wiley library. Samples were run in a REML application with rep as a random sensory effect using JMP Pro 15 (SAS Institute Inc., Cary, NC). Multivariate tools were utilized to explore the relationships between sensory and GC/MS results.

III. RESULTS

No differences ($P > 0.05$) were found between the aging treatments for lamb identity, brown, roasted, sweet, bitter, sour, umami, fat-like, bloody/serummy, metallic, liver-like, musty/earthy, lanolin, mutton, or juiciness. Dry-aged loin samples were more ($P < 0.04$) salty than no age (1.9 vs. 1.5, respectively). Dry-aged loins tended to be more green ($P = 0.078$) than those without age (1.5 vs. 1.1, respectively). No age loins received lower ($P < 0.001$) muscle fiber and connective tissue ratings than dry-aged (10.1 vs. 12.7 and 11.7 vs. 12.8, respectively). Of the volatile aromatic compounds identified ($n = 62$), a 1.6-fold decrease ($P < 0.05$) in log Total Ion Count of 2-pentyl furan and hentriacontane and a 0.5-fold increase ($P < 0.05$) for thiobis-methane and 2-methyl-butanal was found with 14-d dry aging time.

IV. CONCLUSION

Dry aging lamb loins for 14 d enhanced tenderness of the samples with no disadvantage to flavor profiles.

Keywords: gas chromatography-mass spectrometry, lamb, sensory

