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Palatability Characterization of Fresh and Dry-Aged Ground Beef Patties

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Abstract

Descriptive trained sensory attributes, fatty acids, and volatile compounds were determined to characterize the effects of dry-aging on ground beef. Beef shoulder clods were ground to include 100% fresh beef, 100% dry-aged beef, and a 50% fresh and 50% dry-aged ground beef blend. Samples comprised of 100% dry-aged beef were rated greatest ($P < 0.001$) for browned/ grilled, earthy/mushroom, and nutty/roasted-nut flavors; however, panelists also detected greater (P £ 0.011) incidences of sour/ acidic and bitter flavors. The addition of dry-aged beef increased ($P < 0.001$) hardness and reduced ($P < 0.001$) tenderness. Dryaging also caused a shift in saturated fatty acids, where shorter chain saturated fatty acids (£ 16:0) were reduced (P £ 0.034) compared to stearic acid (18:0). Meanwhile, increases of *trans*-octadecenoic acid (18:1 *trans*) and decreases of *cis* monounsaturated fatty acids were present in dry-aged beef. Concentrations of 18:2 conjugated linoleic isomers were greatest ($P < 0.001$) in fresh beef and decreased with the incorporation of dry-aged beef. Several lipid-derived volatile compounds were greater ($P < 0.05$) in dry-aged beef compared with fresh beef, implying a greater degree of lipid degradation among dry-aged beef. Increases (P £ 0.031) were determined for 3- and 2-methyl butanal with the addition of dry-aged beef. Intermediates of the Maillard reaction, 2,3-butanedione and acetoin, were determined to be greatest (P £ 0.046) from dry-aged beef. Alterations of fatty acids and volatile compounds with dry-aging were determined to be related with intensity of individual flavor attributes. Overall, it may be concluded that inclusion of dry-aged beef impacts flavor profile through altered fatty acid profiles and flavor related compounds. These results support the idea that dry-aging may be utilized to impart an altered ground beef flavor experience.

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