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Effects of Labeling and Consumer Health Trends on Preferred Ground Beef Color Characteristics, Fat Content, and Palatability in Simulated Retail Display

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Objectives

Nutritional concerns and attempts to limit fat in the diet over the past decades have impacted the protein market, decreasing red meat consumption as well as prompting the advent of lean and extra lean ground beef. Such lean blends of ground beef may suffer in palatability, however, resulting in less satisfied consumers turning to other protein sources. While consumers are demanding lean ground beef, fatter blends may be more palatable. This study seeks to bridge the gap between perceived health and palatability by evaluating preferred fat content and instrumental color characteristics between labeled and unlabeled packages of ground beef in simulated retail display and comparing this data to preferred palatability characteristics in taste sampling.

Materials and Methods

Participants were asked to identify the relative importance of characteristics commonly used in purchasing ground beef (color, label, fat content, company, and price) and select a preferred package of ground beef from labeled and unlabeled sections consisting of 4, 10, 20, and 27% fat content. Instrumental color data (CIE L*, a*, b*, hue, and chroma) and their main drivers (oxymyoglobin proportion) were also collected. Participants then completed a blind taste sampling of ground beef with variable fat contents as previously described and were asked to evaluate samples on juiciness, bind, beef flavor, off flavor, and overall impression. Data were evaluated through the Mixed Model procedure of SAS, version 9.4 (SAS Inst. Inc., Cary, NC).

Results

Color, fat, and price were found to be significantly more important ($P < 0.05$) than label, which was significantly more important than company for package preference. No trend toward fatter or leaner blends was found between labeled and unlabeled selections, with 62.64% of participants selecting identical packages between the 2 sections. The 20% fat treatment was the most frequently selected product in both labeled and unlabeled sections, however the 2 leaner blends combined garnered more preferred selections than the 2 fatter blends (56.67 vs. 43.33%, respectively). Instrumental color data found significant trends toward a lighter product and increasing L* value with increasing fat content as well as decreasing oxymyoglobin proportion with increasing fat content. No significant differences were found between the blends for any trait in sensory taste evaluation.

Conclusion

These results suggest that while consumers have specific preferences when purchasing ground beef that can be replicated without a label using visual inspection alone, they are less discerning between cooked ground beef of different fat contents. This may explain the continued demand for lean ground beef, as consumers in this study found no significant differences in palatability between ground beef differing in fat content from 4 to 27%. Continued research comparing preferred fat content of ground beef in retail display with preferred fat content for palatability is encouraged to expand on the findings of this study.