

Impact of Disclosing Fat Content on Consumer Sensory Evaluation of Ground Beef From a Similar Source

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Abstract

The objective of this study was to determine the effect of providing information regarding fat content prior to evaluation on consumers' palatability ratings on ground beef from a similar source. For this study, 80% lean/20% fat ground beef chubs ($n = 15$ /panel type) were obtained, and 0.25-lb patties were fabricated from the chubs. Chubs were assigned randomly to panels. Panels received samples labeled as the following: 90% lean/10% fat (90/10), 80% lean/20% fat (80/20), 73% lean, 27% fat (73/27), lean, extra lean, and one sample with no information given (NONE). Samples were evaluated by consumers ($n = 105$), who were provided information regarding treatment prior to evaluation, on 0- to 100-point line scales for tenderness, juiciness, flavor, texture overall liking, and purchasing intent. Consumers also rated each trait as acceptable or unacceptable. The 90/10, 80/20, and 73/27 labels on ground beef resulted in a large increase ($P < 0.05$) in consumer ratings for tenderness, flavor, and overall liking. Conclusively, presenting information regarding fat content to consumers influences perceived palatability of ground beef.

Introduction

Consumers are consistently provided with information regarding fat content/leanness of ground beef at the point of purchase. The effect of fat content on ground beef palatability has been comprehensively researched (Berry and Leddy, 1984; Troutt et al., 1992; Miller et al., 1993; Berry, 1994; Wong and Maga, 1995). However, these studies were all conducted on ground beef products varying in quality. Research exists in other segments of the food industry on the effect of disclosing fat content on consumers' perceived palatability (Solheim and Lawless, 1996; Westcombe and Wardle, 1997), there have not been studies evaluating this in ground beef. Therefore, the objective of this study was to determine the impact of providing consumers with information regarding the fat content of ground beef on the consumer's eating experience.

Experimental Procedures

Chubs ($n = 15$) of 80% lean/20% fat ground beef were obtained from a food purveyor to be from the same production lot and day, and were transported to the Kansas State University Meat Lab. The chubs were then fabricated into 0.25-lb patties. Chubs were randomly assigned to one or two consumer panel sessions, so all samples were as iden-

tical as possible. The patties were randomly designated and labeled with the following labeling terms: 90% lean/10% fat (90/10), 80% lean/20% fat (80/20), 73% lean/27% fat (73/27), lean, extra lean, or a blank sample (NONE). Consumers ($n = 105$) were recruited, given each sample, and completed a digital survey during the assessment of samples. Information regarding treatment was provided to consumers prior to evaluation of each sample, and surveys consisted of 0- to 100-point line scales for tenderness, juiciness, flavor, texture, overall liking, and purchasing intent. Moreover, consumers also determined each trait as acceptable or unacceptable.

Results and Discussion

Although only limited differences in consumer ratings existed, consumers' perception of ground beef products did change when additional labeling information was provided (Figure 1). There was an increase ($P < 0.05$) in the ratings for tenderness for 90/10 (20.1%), 80/20 (21.2%), and 73/27 (24.2%) labeled products when fat content information was provided to consumers. Moreover, large increases ($P < 0.05$) were found in flavor likeability ratings for 90/10 (25.2%), 80/20 (25.3%), 73/27 (32.6%), and lean (15.3%) labeled ground beef. There was a considerable increase ($P < 0.05$) in ratings for overall likeability for 90/10 (22.2%), 80/20 (27.5%), and 73/27 (27.1%) labeled ground beef when labeling information was provided. When labeled 90/10, 80/20, and 73/27 there was an increase ($P < 0.05$) in the percentage of samples rated as acceptable for tenderness, in contrast to extra lean labeled products which had a decrease ($P < 0.05$) in the percentage rated as acceptable when information was provided about the treatment. Retrospectively, when assessing juiciness, extra lean and 90/10 labeled samples had a larger ($P < 0.05$) decrease in the percentage of samples rated as acceptable when compared to 80/20 and 73/27 labeled samples when fat content was revealed. Samples labeled as 90/10 and extra lean resulted in a decrease ($P < 0.05$) in the percentage of samples rated as acceptable for juiciness. Providing the fat content to consumers did not increase/decrease ($P > 0.05$) the percentage of samples rated as acceptable for flavor and overall, for any of the treatments.

Implications

Modern consumers are paying closer attention to labeling statements than their past counterparts. Results from this study support this trend, indicating consumers' eating experiences are affected by the fat content labeling found on ground beef packages. Ground beef marketing decisions should consistently consider the information incorporated on packaging, including fat content, as there is an impact on consumers' palatability experience.

References

- Berry, B., and K. Leddy. 1984. Effects of fat level and cooking method on sensory and textural properties of ground beef patties. *Journal of Food Science* 49(3):870-875.
- Berry, B. W. 1994. Fat level, high temperature cooking and degree of doneness affect sensory, chemical and physical properties of beef patties. *Journal of Food Science* 59(1):10-14. doi: 10.1111/j.1365-2621.1994.tb06885.x.
- Miller, M., M. Andersen, C. Ramsey, and J. Reagan. 1993. Physical and sensory characteristics of low fat ground beef patties. *Journal of Food Science* 58(3):461-463.

Solheim, R., and H. T. Lawless. 1996. Consumer purchase probability affected by attitude towards low-fat foods, liking, private body consciousness and information on fat and price. *Food Quality and Preference* 7(2):137-143. (Article) doi: 10.1016/0950-3293(95)00045-3.

Troutt, E. S., M. C. Hunt, D. E. Johnson, J. R. Claus, C. L. Kastner, D. H. Kropf, and S. Stroda. 1992. Chemical, physical, and sensory characterization of ground beef containing 5 to 30 percent fat. *Journal of Food Science* 57(1):25-29. doi: 10.1111/j.1365-2621.1992.tb05416.x.

Westcombe, A., and J. Wardle. 1997. Influence of relative fat content information on responses to three foods. *Appetite* 28(1):49-62. (Article) doi: 10.1006/appe.1996.0066.

Wong, N. H., and J. A. Maga. 1995. The effect of fat content on the quality of ground beef patties *Developments in Food Science* No. 37. p 1345-1351.

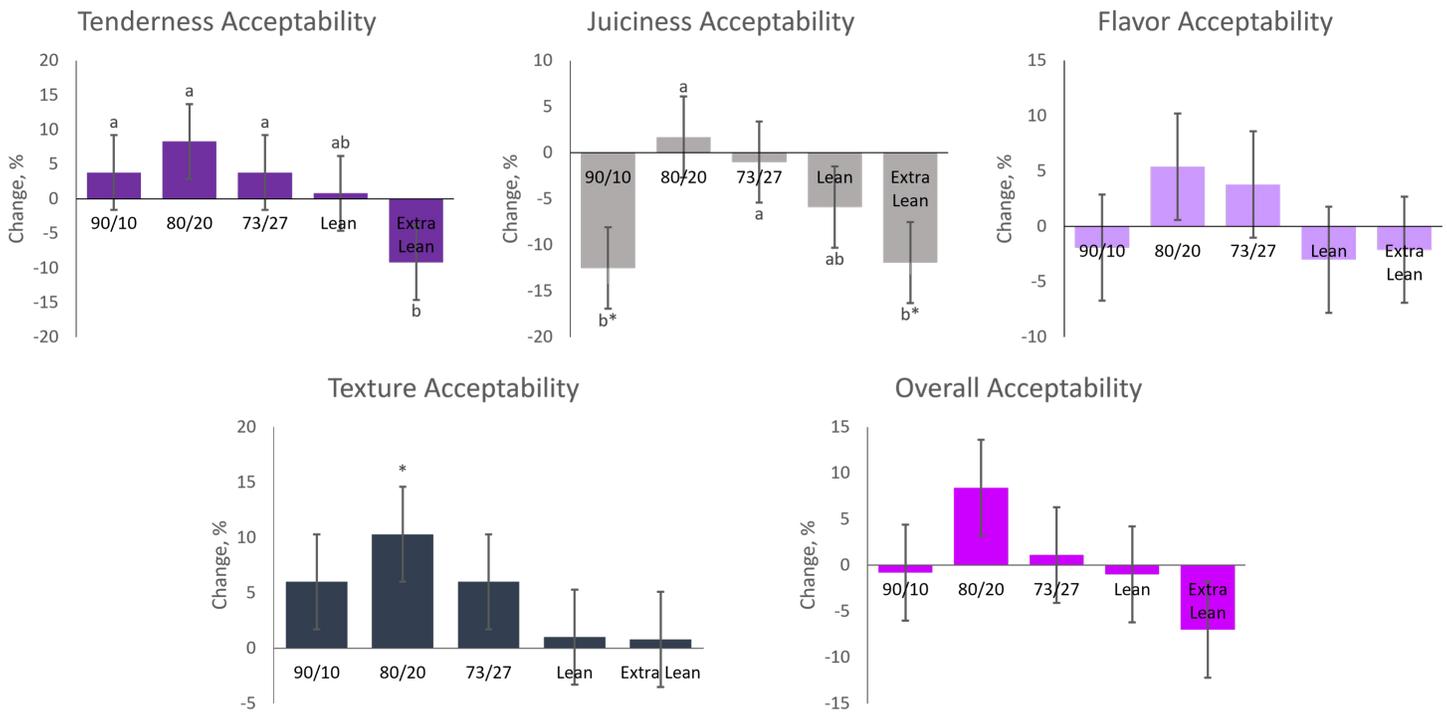


Figure 1. Change in the percentage of samples rated as acceptable by consumers due to lean content disclosure prior to sample evaluation. Fat content is presented as percentage lean/percentage fat. ^{ab} Least square means within the same trait lacking a common superscript differ ($P < 0.05$). * Mean differs from zero ($P < 0.05$).