

Changes in the Perception of Ground Beef Quality as a Result of Primal Labeling

L.A. Egger, K.M. Harr, E.S. Beyer, K.J. Farmer, S.G. Davis, M.D. Chao, J.L. Vipham, M.D. Zumbaugh, and T.G. O'Quinn

Abstract

The objective of this study was to determine the effect of providing primal source information to consumers on palatability ratings of 80% lean/20% fat ground beef. Ground beef chubs ($n = 15$) that were obtained from the same production lot and day were formed into patties. Consumers ($n = 105$) were asked to independently evaluate a sample for tenderness, juiciness, texture liking, flavor liking, overall liking, and likelihood of purchase. Prior to serving, consumers were informed of the sample's primal source which were labeled as: ground chuck, ground round, ground sirloin, and store ground along with a sample that had no information (NONE). While primal source was not one of the top five high purchasing factors, consumers' palatability ratings were greatly impacted by primal blend type disclosure. Consumers rated ground chuck and ground sirloin labeled samples higher ($P < 0.05$) for juiciness than ground round labeled and NONE labeled samples, but scored them similar ($P > 0.05$) to store ground labeled samples. In addition, ground chuck and ground sirloin labeled samples were identified as more ($P < 0.05$) tender than NONE by consumers but ranked similar ($P > 0.05$) to ground round and store ground labeled samples. On the contrary, the ground sirloin labeled ground beef ranked higher ($P < 0.05$) for flavor liking in comparison to ground round labeled and NONE samples but scored similar ($P > 0.05$) to ground chuck and store ground labeled ground beef. Ground chuck labeled samples were rated higher ($P < 0.05$) for texture liking than ground round, store ground, and NONE samples. Furthermore, NONE was ranked lower ($P < 0.05$) for overall liking than ground chuck, ground sirloin, ground round, and store ground labeled products. Lastly, ground chuck was more likely ($P < 0.05$) to be purchased by consumers than ground round, store ground, and NONE. Primal source labeling improved ($P < 0.05$) flavor liking ratings by more than 45% and texture liking ratings ($P < 0.05$) by more than 25% when the information for the four primal sources was offered. While all samples were deemed acceptable for tenderness, juiciness, flavor, texture, and overall liking, the overall liking and purchasing intent ratings increased ($P < 0.05$) when consumers were told the primal source information before sample evaluation. This indicates that the addition of primal source labeling enhances consumers' perception of their palatability experience in ground beef.

Introduction

The influence of labeling and information on marketing ground beef and other products is essential for the sale of those products to consumers. While research has been

performed to understand the effects of labeling differences and affected perception, these studies actually had product differences in quality, primal source, or other various factors researched (Kerin et al., 1992; Lunardo et al. 2016). Nonetheless, minimal information exists on the impact of the actual labeling difference and the way consumers utilize labeling and marketing information in their purchasing decisions. Thus, the objective of this study was to assess the impact of primal source labeling information on consumers' palatability ratings of ground beef.

Experimental Procedure

Chubs (n = 15) of 80% lean/20% fat ground beef were procured from the same source and production lot. The chubs were held in the Kansas State University Meat Lab at a constant temperature of 30°F before processing. After an 11-day hold, the chubs were processed into 0.25 lb patties using a patty former. The patties were kept in pairs and assigned an identification code and one of the following label sources: ground chuck, ground round, ground sirloin, store ground, or blank with no information (NONE). The patties were vacuum packaged in a Rollstock machine and frozen at -4°F until further analysis.

Samples were thawed 24 hours in preparation for consumer panels and cooked to an internal temperature of 160°F on a clamshell grill (Griddler Deluxe, Cuisinart, East Windsor, NJ). Temperature was measured using a Thermoworks Thermopen Mk4 (Salt Lake City, UT).

Consumers (n = 105) were recruited to complete an independent palatability survey of the eating quality of the samples. Immediately prior to consumption of each sample, consumers were informed of the primal source information for the samples. Samples were rated on tenderness, juiciness, flavor liking, texture liking, overall liking, and likelihood of purchase on a scale of 0 to 100. After rating the traits, consumers were asked if each trait met the threshold of acceptability of purchase (yes/no).

Results and Discussion

While primal source was not one of the top five high purchasing factors, consumers' palatability ratings were greatly impacted by primal blend type disclosure (Table 1). Consumers rated ground chuck and ground sirloin labeled samples higher ($P < 0.05$) for juiciness than NONE labeled samples, but scored them similar ($P > 0.05$) to ground round and store ground labeled samples. In addition, ground chuck and ground sirloin labeled samples were listed as more ($P < 0.05$) tender than ground round and NONE labeled samples by consumers but rated similar ($P > 0.05$) to store ground labeled samples. On the contrary, the ground sirloin labeled ground beef ranked higher ($P < 0.05$) for flavor liking in comparison to ground round labeled and NONE samples, but were comparable ($P > 0.05$) to ground chuck and store ground labeled ground beef. Ground chuck labeled samples were rated higher ($P < 0.05$) for texture liking in comparison to ground round, store ground, and NONE samples. Furthermore, NONE was rated lower ($P < 0.05$) for overall liking than ground chuck, ground sirloin, and store ground labeled products. Lastly, ground chuck was more likely ($P < 0.05$) to be purchased by consumers than ground round, store ground, and NONE samples.

Primal source labeling improved ($P < 0.05$) flavor liking ratings by more than 45% and texture liking ratings by more than 25% when the information for all primals was

presented (Table 2). While all samples were deemed acceptable for tenderness, juiciness, flavor, texture, and overall liking, the overall liking, and the purchasing intent ratings increased ($P < 0.05$) when consumers were told the primal source information before sample evaluation.

Implications

These results indicate the addition of primal source labeling enhances consumers' perceptions of their palatability experience and likelihood of purchase in ground beef. Though differences among primal source labeling on palatability ratings were found, labeling of all primal sources positively influenced consumer ratings. Retailers who market ground beef with primal-source labels should benefit in consumer's improved eating experience over products without primal-source labels.

References

- Kerin, R. A., A. Jain., and D. J. Howard. 1992. Store shopping experience and consumer price- quality-value perceptions. *Journal of Retailing*. 68.4:376.
- Lunardo, R., and F. Livat. 2016. Congruency between colour and shape of the front labels of wine: effects on fluency and aroma and quality perceptions. *International Journal of Entrepreneurship and Small Business*. 29(4): 528-541.

Table 1. Consumer (n = 105) palatability ratings¹ for ground beef patties when additional information was given about the primal blend

Treatment	Tenderness	Juiciness	Flavor liking	Texture liking	Overall liking	Purchasing intent
Ground chuck	72.3 ^a	73.6 ^a	65.9 ^{ab}	70.3 ^a	70.4 ^a	70.2 ^a
Ground round	65.8 ^b	69.9 ^{ab}	61.0 ^{bc}	64.2 ^{bc}	64.3 ^{ab}	63.2 ^{bc}
Ground sirloin	71.5 ^a	73.9 ^a	69.4 ^a	69.7 ^{ab}	70.1 ^a	69.5 ^{ab}
Store ground	67.7 ^{ab}	70.9 ^{ab}	63.2 ^{abc}	63.8 ^c	65.4 ^a	62.4 ^c
NONE ²	65.6 ^b	65.8 ^b	57.5 ^c	59.1 ^c	58.8 ^b	56.9 ^c
SE ³	2.1	2.1	2.4	2.1	2.3	2.6
<i>P</i> -value	0.04	0.03	0.01	< 0.01	< 0.01	< 0.01

¹Sensory scores: 0 = not tender/juicy, dislike flavor/texture/overall extremely, or extremely unlikely to purchase; 50 = neither tender nor tough, juicy nor dry, neither like nor dislike flavor/texture/overall, or neither likely or unlikely; 100 = very tender/juicy, like flavor/texture/overall extremely, or extremely likely to purchase.

²NONE: No information was provided.

³Standard error (largest) of the least squares means.

^{a-c}Least square means within the same panel type of the same column lacking a common superscript differ ($P < 0.05$).

Table 2. Percentage change in consumer (n = 105) ratings¹ of palatability traits when information about primal source is given on ground beef versus no information² given

Treatment	Percentage					
	Tenderness	Juiciness	Flavor liking	Texture liking	Overall liking	Purchasing intent
Ground chuck	29.1 ^{a*}	36.3*	49.3*	41.5*	47.4*	64.8*
Ground round	14.6 ^{b*}	29.0*	45.9*	36.1*	27.6*	59.7*
Ground sirloin	25.3 ^{ab*}	34.3*	69.0*	33.6*	45.5*	73.1*
Store ground	17.3 ^{b*}	29.5*	50.5*	25.1*	28.1*	54.7*
SE ²	7.2	8.8	22.1	9.4	13.5	23.5
<i>P</i> -value	0.04	0.40	0.25	0.21	0.27	0.52

¹Percentage change in ratings: (consumer trait scores – consumer blank scores) / consumer blank scores.

²Standard error (largest) of the least squares means.

*Mean differs from 0 ($P < 0.05$).

^{ab}Least square means within the same panel type of the same column lacking a common superscript differ ($P < 0.05$).