

Palatability of Ground Beef Increases When Brand Is Disclosed in Consumer Testing

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Introduction

Of the beef products on the market, ground beef is one of the least expensive and most universal. Ground beef represents the largest volume of protein served in the foodservice industry, at 64%, and is the most popular beef item for consumers when preparing meals in their home (NCBA, 2012). To date, little research has evaluated ground beef palatability despite representing a large sector of the beef market. All ground beef is not the same to consumers. Ground beef from branded beef programs, higher lean points, and primal-specific blends are traditionally sold at retail for higher prices. Branding is used to indicate an increased quality level associated with the product, and encourages consumers to pay a premium in order to receive a superior product (Grunert et al., 2004). Certain branding strategies can influence consumers' purchasing decisions even if they have not previously tasted the product (Levin and Gaeth, 1988). There is no conclusive evidence of how ground beef palatability changes with fat levels, although some studies have indicated products with higher fat levels are perceived to be more juicy (Myers et al., 2012). It is common for meat product studies to evaluate palatability differences in products through blind testing; however, consumers do not purchase and consume meat without being exposed to information about the product. Therefore, the objective of this study was to determine the effect of brand and product identification on consumer palatability ratings of ground beef patties.

Key words: brand, palatability, ground beef

Experimental Procedures

Six ground beef treatments (6, 10 lb-chubs/treatment) were selected to represent a variety of fat levels and brands. These included 90/10 Certified Angus Beef (CAB) ground sirloin, 90/10 commodity ground beef, 80/20 CAB ground chuck, 80/20 commodity ground chuck, 80/20 commodity ground beef, and 70/30 CAB ground beef. Ground beef chubs were formed into 1/3 lb patties using a patty former. Formed patties were paired and identified, with two consecutively formed patties assigned to blind consumer testing and the following two assigned to non-blind testing. All samples were vacuum packaged, then frozen and stored at -20°C for one month until subsequent analysis. Thawed patties were cooked using a convection oven to an internal temperature of 165°F, monitored by thermocouples. Following cooking, patties were

cut into quarters and served to consumers (n=112) who evaluated samples in two rounds for tenderness, juiciness, flavor, texture, and overall liking on a line scale (3.94 inches long; 100 points) line scale anchored on both ends and at the midpoint with descriptive terms. On this scale 0 = not tender/juicy, dislike flavor/texture/overall extremely; 50 = neither tough nor tender, dry nor juicy, or neither like or dislike flavor/texture/overall; and 100 = very tender/juicy, like flavor/texture/overall extremely. The first round included one sample from each treatment served to consumers in a random order with no identification of the brand or product type. In the second round, consumers evaluated one sample from each treatment in a random order and were informed of the product type and brand prior to evaluation.

Results

During blind testing consumers found few differences between treatments; however, when information was disclosed to consumers prior to tasting, many differences were observed (Table 1). When sampled blind, 90/10 commodity ground beef was less tender ($P < 0.05$) than all other treatments and lower ($P < 0.05$) than 80/20 commodity ground beef for overall liking. No differences ($P < 0.05$) were found among treatments for texture when ground beef was sampled blind, but when product type and brand were disclosed, 90/10 CAB ground sirloin had the best ($P < 0.05$) texture, while all other treatments were similar ($P > 0.05$) in texture. For all CAB products evaluated, increases ($P < 0.05$) were found for tenderness, juiciness, flavor liking, texture liking, and overall liking after consumers were informed of branding and product type information. Few products had reduced ($P < 0.05$) palatability ratings when branding and product type information was presented, although 80/20 commodity ground beef and 80/20 commodity ground chuck were perceived to be less ($P < 0.05$) tender and have a reduced ($P < 0.05$) flavor liking after this information was disclosed.

Similar to palatability scores, very few differences among treatments were seen in acceptability of ground beef when sampled blind (Table 2). During blind testing, 90/10 commodity ground beef had the lowest ($P < 0.05$) acceptability for tenderness, while all other treatments had similar ($P > 0.05$) percentages of samples rated as acceptable for tenderness. Few other differences were noted during blind sampling, but after product type and brand were disclosed, differences between products were more definitive. When brand was identified, acceptability for 90/10 CAB ground sirloin increased more than 20% for juiciness, flavor, and overall liking, resulting in this product having nearly 95% acceptability for all traits except juiciness (Figure 1). All palatability traits increased ($P < 0.05$) for 80/20 CAB ground chuck as well, with juiciness, flavor, and overall liking, increasing the most (11, 18, and 10% increases, respectively). Prior to treatment disclosure, all products had similar ($P > 0.05$) acceptability for overall liking (Table 2); however, overall liking acceptability for CAB products increased ($P < 0.05$) by 16%, 22%, and 15% for 90/10 CAB ground sirloin, 80/20 CAB ground chuck, and 73/27 CAB ground beef, respectively, when brand and product type were known (Figure 1). These results indicate CAB products were rated as more ($P < 0.05$) acceptable overall when consumers were aware of the brand.

Implications

These data indicate few palatability differences among ground beef treatments when tested blind, showing that during blind sampling, brand and subprimals used have little effect on palatability. However, when product and brand were identified, multiple treatments received increased ratings for palatability traits. Therefore, branding and product awareness have large effects on consumer perception of ground beef palatability.

Acknowledgments

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Table 1. Consumer (n = 112) palatability ratings¹ for blind and non-blind testing of ground beef patties

Quality treatments	Tenderness	Juiciness	Flavor liking	Texture liking	Overall liking
Blind					
90/10 commodity	52.06 ^d	45.93 ^e	57.15 ^{c,d}	55.34 ^b	55.67 ^c
90/10 CAB ground sirloin	60.91 ^{b,c}	47.43 ^e	59.80 ^{b,c,d}	60.03 ^b	59.27 ^{b,c}
80/20 commodity	61.84 ^{b,c}	58.59 ^{a,b,c}	60.79 ^{b,c}	59.24 ^b	61.65 ^b
80/20 commodity ground chuck	61.60 ^{b,c}	55.19 ^{b,c,d}	61.16 ^{b,c}	58.62 ^b	59.49 ^{b,c}
80/20 CAB ground chuck	58.52 ^{b,c}	52.66 ^{c,d,e}	53.96 ^d	57.36 ^b	56.96 ^{b,c}
73/27 CAB	62.19 ^{b,c}	57.13 ^{a,b,c,d}	57.28 ^{c,d}	56.46 ^b	58.80 ^{b,c}
Non-blind					
90/10 commodity	57.00 ^{cd}	51.57 ^{d,e}	60.68 ^{b,c}	57.67 ^b	59.35 ^{b,c}
90/10 CAB ground sirloin	71.12 ^a	61.96 ^{a,b}	72.43 ^a	69.72 ^a	72.19 ^a
80/20 commodity	61.28 ^{b,c}	62.18 ^a	61.55 ^{b,c}	58.49 ^b	61.55 ^b
80/20 commodity ground chuck	60.03 ^{b,c}	56.77 ^{a,b,c,d}	58.83 ^{b,c,d}	57.91 ^b	59.77 ^{b,c}
80/20 CAB ground chuck	61.59 ^{b,c}	58.70 ^{a,b,c}	63.67 ^b	60.14 ^b	62.73 ^b
73/27 CAB	64.07 ^b	62.35 ^a	59.32 ^{b,c,d}	59.68 ^b	59.69 ^{b,c}
SE ²	2.23	2.54	2.47	2.01	2.24
<i>P</i> - value	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01

^{a,b,c,d,e} Least squares means in the same column lacking a common superscript differ ($P < 0.05$).

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

²Standard Error of the least squares means.

Table 2. Percentage of ground beef patties from six quality treatments considered acceptable for tenderness, juiciness, flavor, tenderness and overall liking by consumers (n = 112)

Quality treatments	Tenderness acceptability	Juiciness acceptability	Flavor acceptability	Texture acceptability	Overall liking acceptability
Blind					
90/10 commodity	73.42 ^d	63.09 ^d	76.00 ^{b,c}	80.87 ^{c,d}	74.30 ^d
90/10 CAB ground sirloin	87.77 ^{b,c}	63.09 ^d	77.72 ^{b,c}	79.99 ^d	81.58 ^{b,c,d}
80/20 commodity	86.88 ^{b,c}	78.55 ^{b,c}	83.34 ^{b,c}	81.75 ^{c,d}	83.23 ^{b,c,d}
80/20 commodity ground chuck	90.23 ^{a,b,c}	77.27 ^{b,c}	82.26 ^{b,c}	86.46 ^{b,c,d}	79.56 ^{c,d}
80/20 CAB ground chuck	85.83 ^{b,c}	68.91 ^{c,d}	72.62 ^c	82.20 ^{c,d}	72.09 ^d
73/27 CAB	85.99 ^{b,c}	80.36 ^{b,c}	79.85 ^{b,c}	85.22 ^{b,c,d}	77.95 ^{c,d}
Non-blind					
90/10 commodity	82.28 ^{c,d}	64.93 ^d	80.73 ^{b,c}	82.75 ^{c,d}	81.47 ^{b,c,d}
90/10 CAB ground sirloin	95.70 ^a	83.21 ^{a,b}	94.07 ^a	96.87 ^a	94.89 ^a
80/20 commodity	86.87 ^{b,c}	83.99 ^{a,b}	82.56 ^{b,c}	82.61 ^{c,d}	82.50 ^{b,c,d}
80/20 commodity ground chuck	87.73 ^{b,c}	77.64 ^{b,c}	84.20 ^b	84.30 ^{c,d}	86.92 ^{b,c}
80/20 CAB ground chuck	89.61 ^{a,b,c}	79.63 ^{b,c}	86.10 ^{a,b}	89.54 ^{b,c}	87.93 ^{a,b,c}
73/27 CAB	93.92 ^{a,b}	90.22 ^a	83.26 ^{b,c}	92.80 ^{a,b}	89.54 ^{a,b}
SE ¹	4.74	5.02	5.20	4.81	5.19
P - value	< 0.01	< 0.01	0.03	0.01	< 0.01

^{a,b,c,d} Least squares means in the same column lacking a common superscript differ ($P < 0.05$).

¹Standard Error of the least squares means.

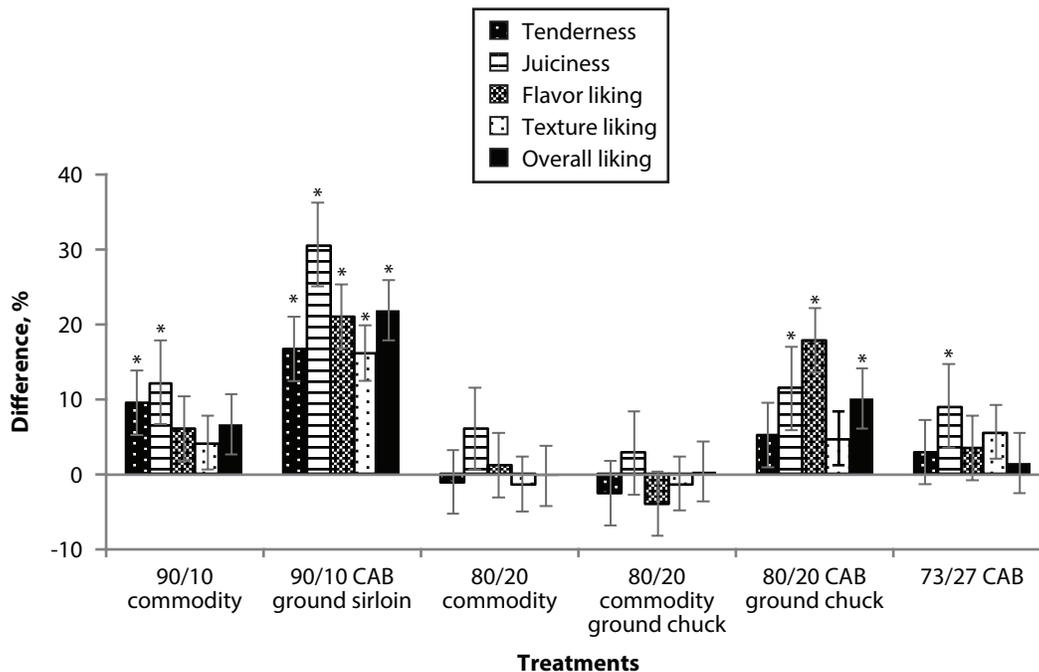


Figure 1. Percent differences in consumer ratings of palatability traits when sample brand and product type were disclosed while testing ground beef patties.

* Significance level ($P < 0.05$)