

Consumer Ratings of Palatability of Cooked Ground Beef Patties Containing 0, 15, 20, and 25% Lean Beef Trimmings at 80 and 90% Lean Content

A Report to BPI Technology Inc.
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Executive Summary: Ratings of ground beef patties containing lean beef trimmings from BPI Technology, Inc., were evaluated by one hundred nineteen consumers for palatability traits of cooked ground beef patties containing either 80 or 90 percent lean and 0, 15, 20, or 25 percent lean beef trimmings (**LBT**). Ground beef patties were obtained from BPI Technology, Inc. and held frozen until used for consumer evaluations. Patties were cooked to 165° F in clamshell-style grills. A handheld thermometer and thermocouple was used to monitor temperature. Raw and cooked patties were weighed and cooking loss determined. Consumer rated the cooked patties for overall like, tenderness, juiciness, like of texture, and like of flavor. The panel was mostly young, male, and high consumers of beef. Consumer rated patties containing 15, 20, and 25 percent LBT significantly higher for all palatability traits versus patties containing 0 percent LBT at both 80 and 90% lean.

Materials and Methods

Beef Patties. All beef patties were supplied by BPI. Patties arrived at the SDSU meat lab in labeled bags. The patties were either 80 or 90 % lean and had either 0, 15, 20, or 25 % LBT. This resulted in eight treatment combinations (80-0, 80-15, 80-20, 80-25, 90-0, 90-15, 90-20, and 90-25). Patties were frozen when received and stored at -10° F until used. Patties were removed from the freezer at the time of cooking and frozen weights were recorded. Patties were cooked in clamshell-style grills (George Foreman) a target internal temperature of 165° F. Actual cooked temperatures ranged from 163 to 185° F, however, the average cooked temperature was 167° F. Cooked patties were weighed, cut into eight pie-shaped pieces and the pieces were placed into Styrofoam bowls with holes punched in the bottom to allow juice to drain. Pieces were held in a 140° F warming oven until served.

Panels. Consumer panels were conducted according to standards set by the American Meat Science Association. Panelists were recruited from the South Dakota State University campus, Brookings, SD, and the surrounding area using fliers and word-of-mouth advertising. One-hundred and nineteen consumers participated in the study over 12 different panel times. Panels were conducted in booths preventing panelist interaction. Prior to the start of the panel, panelists were given brief instructions about panel procedure and were asked to sign a notice of informed consent. All samples were served under red lights to limit differences in visual appearance. One sample of each treatment combination was served in a random order to the panel. The first sample was always an 80-0 and was used as a warm-up sample to prevent errors associated with order of sample; this data was not included in the analysis of data nor were any conclusions drawn from that sample. Samples were coded with a random code to blind consumers to treatment combinations.

Data Analysis. Average values for each palatability trait were calculated for each treatment combination. The average values were compared and separated using a t-test. When differences in averages are noted to be significantly different, the p-value of < 0.05 is being used. Cooking loss was determined by subtracting the cooked weight from the raw weight and dividing by the raw weight.

Results

Consumer Profile. The average consumer in this study was between 20-30 years of age, consumed beef approximately 6 times per week, ate ground beef patties 2 times per week, and was mostly male. The actual numbers follow:

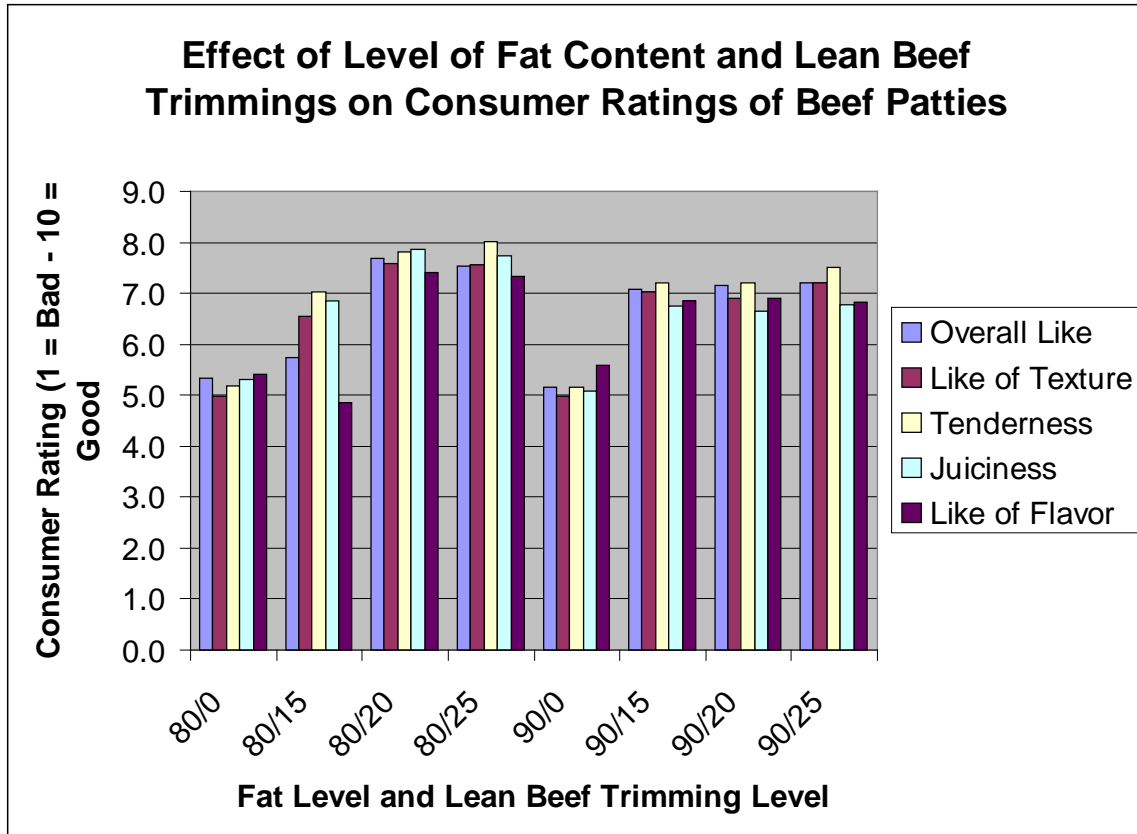
Demographic Profile of Consumer Sensory Panel

A total of 119 consumers participated

Trait	Number of Participants
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Age	
<20	44
20-29	70
30 or older	5
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Times Beef is Consumed per Week	
<1	5
1-2	27
3-4	29
6 or more	58
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Number of Beef Patties Consumed per Week	
<1	5
1	25
2	36
3	22
4	11
5 or more	18
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Sex	
Men	77
Women	42

Taste Panel Results. The results of the taste panel are summarized in the chart below. In addition, the actual averages are reported in a table below the chart. Essentially, patties containing LBT were rated higher (better) for all palatability traits when compared to patties without LBT. It did not appear to matter what level of LBT was added to the patties at either fat level; that is, patties with 15% were rated the same as the patties containing 25% LBT.

Cooking loss was also significantly lower for patties containing LBT. Patties containing BPI had between 3 and 5% less cooking loss than control patties.



The impact of lean beef trimmings on consumer palatability ratings of cooked ground beef patties.					
Treatment (%Lean, % LBT)	Overall Like	Like of Texture	Tenderness	Juiciness	Like of Flavor
80 – 0	5.3	4.9	5.2	5.3	5.4
80 – 15	5.7	6.5	7.0	6.9	4.9
80 – 20	7.7	7.6	7.8	7.9	7.4
80 – 25	7.5	7.6	8.0	7.7	7.3
90 – 0	5.2	5.0	5.2	5.1	5.6
90 – 15	7.1	7.0	7.2	6.7	6.8
90 – 20	7.1	6.9	7.2	6.7	6.9
90 – 25	7.2	7.2	7.5	6.7	6.8

All traits reported on a 10-point scale with 1 = extremely dislike, extremely dislike texture, extremely tough, extremely dry, extremely disliked flavor, and 10 = like extremely, extremely liked texture, extremely tender, extremely juicy, and extremely liked flavor.

