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A Comparison of the Composition of Beef Bacon Products Sold in Southern Ontario, Canada

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Objectives

Unlike pork bacon, beef bacon has no standard product identity. Identifying a product using the word "bacon" can imply a certain likeness to pork bacon; however, without a standard identity, this is not necessarily the case. Beef bacon can be produced using a variety of different processing techniques and still currently be labeled "beef bacon". The potential result is poor product recognition among consumers, a paucity of scientific literature surrounding beef bacon, and ultimately, low process and profit optimization for meat processors. The objective of this study was to examine the composition of commercial beef bacon products sold in southern Ontario, Canada and further investigate the sources of variation. It was hypothesized that due to the lack of standard product identity, there would be a great degree of variability in the appearance and composition of products labeled as "beef bacon".

Materials and Methods

Beef bacon was purchased at the retail level from 6 different meat processors in southern Ontario, Canada. Products were analyzed for moisture, protein, and lipid content, along with a visual lean to fat ratio comparison. Moisture, protein, and lipid content were analyzed from a master batch that was created by mincing 2 strips of beef bacon from 3 different packages of the same brand (6 strips in total per master batch). From the master batch produced from each brand, protein was determined by Dumas, moisture was determined by oven drying at 100°C for 24 h, lipid was then successively tested via Soxhlet, and other components were determined by difference. The lean to fat ratio was determined by analyzing the proportion of black to white in high contrast black (lean) and white (fat) beef bacon renderings through ImageJ. Statistical analysis included determining descriptive statistics with the MEANS procedure of SAS and determining the fixed effect of brand using the MIXED procedure of SAS (SAS Inst. Inc., Cary, NC).

Results

Different brands of beef bacon ranged significantly in moisture content (45.6 to 66.6%; SEM = 0.4; $P < 0.0001$), lipid content (5.0 to 36.6%; SEM = 1.0; $P < 0.0001$), protein content (11.5 to 25.8%; SEM = 0.3; $P < 0.0001$, and other components (1.4 to 7.8%; SEM = 0.9; $P = 0.01$). Total slice area among different brands of beef bacon ranged ($P < 0.0001$) from 38.5 to 130.4 cm^2 with a SEM of 14.3 cm^2. Slice lean percentage among different brands of beef bacon ranged ($P < 0.0001$) from 51.1 to 94.8% with a SEM of 2.0%. Lean:fat among different brands of beef bacon ranged ($P < 0.0001$) from 0.9 to 26.8 with a SEM of 1.7.

Conclusion

The macronutrient composition and appearance of products that were labeled as "beef bacon" in southern Ontario, Canada, was highly variable. The variability was believed to be due to meat processors utilizing different value-added cuts of beef for the production of beef bacon. Further research is necessary to determine the utilization of different beef cuts for the production of beef bacon and the associated effects on processing parameters, storage capabilities, product composition, and sensory characteristics.

