Beef Flavor Attributes for Millennials—In-Home Placement Study

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Beef Flavor Attributes for Millennials - In-home Placement Study: Project Summary

Background

An in-home placement study was conducted to identify flavor attributes of animal protein products that millennials prefer, and to evaluate the effect of cooking method and degree of doneness on consumer acceptability of beef, chicken and pork. This project provides additional information and understanding of how consumers cook and prepare meat across the different species and what drives acceptability of these products.

Positive and negative beef flavor attributes may be different for millennials versus non-millennials and light-versus heavy-beef eaters within each age group. If the industry can understand factors affecting beef flavor acceptability for these consumer segments, the industry can more effectively market beef to maximize positive beef flavors to differing consumer segments. It is important to understand millennial’s perceptions of beef, what factors drive their decisions to eat beef and what factors have the potential to increase their beef consumption.

Objectives

The objectives of this study were to select four consumer groups, millennials and non-millennials that are either light (eat beef 2 to 4 times per month) or heavy (eat beef 3 or more times per week) beef eaters in four cities (Portland, OR; Olathe, KS; University Park, PA; Atlanta, GA) and determine their perceptions of beef liking based on beef, chicken and pork in an in-home placement study. These data were used to understand factors that drive flavor of beef and at no time were overall liking of beef, chicken and pork compared or discussed. However, researchers were able to determine relationships between cooking method, degree of doneness and consumer overall liking across the four consumer classifications.

Methods

Consumers (n=264) that participated in a central location test were selected so that they were either millennials (ages 18 to 34; n=132) or non-millennials (n=132; ages greater than 34) and within age categories to be either light (n=66 per age group; eat beef 2 to 4 times per month) or heavy beef eaters (n=66 per age group; eat beef 3 or more times per week). Consumers were selected in four cities across consumer groups. Consumers were provided one USDA Choice beef Top Loin Steak, one Select beef Bottom Round Flat Roast, one chicken Breast and one boneless pork Loin Chop. Each meat product was vacuum-packaged, labeled and frozen. The intent was to create a set of steaks, chops or roasts that differed in key flavor attributes and that could be prepared at home. Consumers were asked to answer a questionnaire as they prepared each product that included cooking method, ingredients added, degree of doneness, cuisine classification and preparation time. Consumers also were provided a ballot and were asked to rate the cooked product for appearance, overall flavor and texture like/dislike using 9-point hedonic scales. Consumers were provided color scales for determination of degree of doneness and descriptions of cooking methods.

Important Results

Consumers handled meat cuts somewhat differently. The majority of consumers thawed the meat the day before or the day of preparation by placing the meat in the refrigerator. For Top Loin Steaks, the consumers tended to either cook the steaks on the outdoor grill or pan fry/sauté. Interestingly, 11% of consumers cooked Bottom Round Roasts on the outdoor grill and 8% pan fried/sautéed meat from these roasts. For pork Loin Chops, about 25% of consumers pan fried/sautéed their pork Chops with outdoor grilling and oven-roasting, uncovered being the second most common cooking method. Almost 30% of consumers pan fried/sautéed the chicken Breast with about 20% cooking chicken Breasts using the outdoor grill or oven-roasting, uncovered. Consumers indicated that the majority of beef Top Loin Steaks were cooked to a medium degree of doneness with about 25% of Top Loin Steaks cooked to either medium rare or well done degree of doneness. The majority of beef Bottom Round Roasts, pork Loin Chops and chicken Breasts were cooked to well-done degree of doneness with about 25% of beef Bottom Round Roasts and pork Loin Chops cooked to medium degree of doneness. The majority of the meat in this study was served as the main course on the plate but some consumers combined the meat with other ingredients. Most consumers did not add additional ingredients to Top Loin Steaks and pork Loin Chops at the table, but about 25% of consumers added salt and pepper to
these two cuts. For Bottom Round Roasts between 20 and 30% of consumers either ate the roast plain, added nothing as the roast was cooked in sauce or added salt and pepper. For chicken Breasts, about 25% of consumers either ate it plain or added salt and pepper.

Consumer age groups did not differ in their response to cuts; however, cuts differed in palatability. There were different drivers of liking across consumer age groups. Non-millennial heavy beef eaters, non-millennial light beef eaters, millennial heavy beef eaters and millennial light beef eaters used slightly different cooking methods when cooking beef, pork and chicken. Visual appearance, both before cooking and after cooking, was more important to non-millennial heavy beef eaters. Additionally, non-millennial light beef eaters liked meat that was more tender, where as non-millennial heavy beef eaters liked beef that was more bloody/serumy or had been cooked to lower degrees of doneness and had higher levels of beef identity flavor. Millennials had different drivers of liking for meat. Millennial heavy beef eaters accepted meat that was higher in percentage moisture, it could be slightly tougher, and they accepted metallic flavors and higher non-heme iron levels. Millennial light beef eaters liked more fat-like flavor, higher lipid percentage, salty and brown roasted basic taste and flavor attributes. Consumer groups responded to meat sources similarly meaning that whether eating beef, pork or chicken, the same palatability drivers as defined above were important to them.

Figure 3. Partial least squares regression biplot ($R^2=0.95$) for consumer liking attributes (in blue), trained descriptive attribute sensory attributes (in red), and consumer group (in green).