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Honduran Consumer Perception of Palatability of Enhanced and Non-Enhanced Beef from Various Finishing Diets

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Objectives

Honduran consumers traditionally prefer beef cooked to a well-done degree of doneness, which can reduce palatability. Increasing an animal's plane of nutrition can improve meat palatability, and enhancing beef can enrich eating quality. Our objective was to determine the effects of finishing diet and enhancement on eating quality and value of steaks.

Materials and Methods

Regionally available feedstuffs were added into 7 finishing diets: grass-finished control (CON), distillers dry grain (DDG), palm kernel meal (PKM), PKM replication (PKMR), soybean meal (SB), SB with poultry litter (SBPL) and sugarcane (SC). Paired strip loins ($n = 210$; 30/diet) were collected, so 1 loin could be enhanced (E) with water, salt, and sodium tripolyphosphate to 12% of the green weight, while the other loin remained non-enhanced (N). Strip loins were fabricated into 2.5-cm steaks and frozen at 21 d postmortem. Thawed steaks were cooked on clamshell grills to 77°C, portioned and served warm to 3 consumers ($n = 288$). Panelists evaluated each sample for tenderness, juiciness, flavor and overall liking on 100-mm lines scales, as well as acceptability of each trait (TACC, JACC, FACC, and OACC). Willingness to pay (WTP) was rated in Honduran Lempira (Lps) on a line scale anchored from 0/lb. to 400/lb. Each consumer evaluated 8 samples, consisting of CON-E and CON-N along with 6 other treatments arranged in a prearranged, balanced order. Sensory data were analyzed using the GLIMMIX procedure of SAS (SAS Inst. Inc., Cary, NC) as a split plot design with diet as a whole plot fixed effect, enhancement as a subplot fixed effect, and panelists as a random effect ($\alpha = 0.05$).

Results

Diet and enhancement interacted ($P < 0.01$) to influence all palatability traits, WTP and acceptability of all traits. In general enhancement improved ($P < 0.05$) all palatability traits, acceptability, and WTP compared to their non-enhanced counterparts for all treatments, except CON. CON-N and CON-E had similar ($P > 0.05$) scores for tenderness and overall liking, as well as similar WTP, TACC, JACC, FACC, and OACC. Enhancement did not improve ($P > 0.05$) JACC for PKM, PKMR, and SC. DDG-E was tenderer ($P < 0.05$) than all other treatment combinations, except PKMR-E, while consumers rated SB-N and SC-N less tender than all other treatments. This same trend was observed for TACC. Aside from DDG-E and SB-E, PKM-E beef was juicier ($P < 0.05$) than other treatments, and SB-N was less juicy than all other treatments except for SC-N. The flavor of DDG-E, PKM-E, PKMR-E, SB-E and SBPL-E was liked more ($P < 0.05$) by consumers than all other treatments; a greater percentage of consumers found those same treatments more acceptable for flavor. Meanwhile, the flavor of SB-N and SC-N was liked less ($P < 0.05$) compared to all other treatments. Overall consumers liked DDG-E, PKM-E, PKMR-E, SB-E and SBPL-E more ($P < 0.05$) and SB-N and SC-N less than all other treatments. OACC followed the same trend as scores for overall liking. PKMR-E, DDG-E, SBPL-E, and PKM-E had greater ($P < 0.05$) WTP than all other treatments except SB-E, while SB-N had lower WTP than all other treatments except SC-N, indicating that enhancement greatly improved the WTP of SB samples.

Conclusion

Results from this study indicate the use of high-energy diets and enhancement of steaks can improve Honduran consumer's perception and acceptance of palatability traits and garner a higher WTP when used singularly or in combination.