

CONSUMERS PREFER BEEF FROM FEEDLOT CROSSBRED ANGUS × NELORE STEERS AND HEIFERS OVER BULLS

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I. OBJECTIVES

Beef tenderness is designated as a very important sensory trait by consumers, which has a great influence on purchase decision. Therefore, this work aimed to evaluate the influence of the sex class (SC; bull, heifer, and steer) of feedlot crossbred Angus × Nelore cattle on beef sensory traits.

II. MATERIALS AND METHODS

F1 Angus × Nelore cattle (50 bulls, 50 steers, and 50 heifers) at 11 mo of age were raised under diet composed of 86% concentrate (mainly corn) and 14% roughage (*Brachiaria* hay) in dry matter for 150 d and harvested. The final mean weight was 488.9 ± 30.7 kg, 452.5 ± 24.9 kg, and 431.3 ± 26.3 kg for bulls, steers, and heifers, respectively. An acceptance test was performed with 126 untrained panelists who evaluated overall liking, flavor, tenderness, and juiciness of *Longissimus* muscle steaks. Three samples were offered to each panelist, referring to the 3 SC in the aging time of 14 d. For overall liking, a structured 9-point hedonic scale (where 1 = “dislike extremely,” and 9 = “like extremely”) was used. For the other traits, a 5-point structured scale was used (where 1 = “very bland, very tough or very dry,” and 5 = “very intense, very tender or very juicy” according to the flavor, tenderness, and juiciness; respectively). The data were analyzed using a randomized block design by a mixed linear model, including the fixed effect of SC, the random effects of the block (panelist), and residue. The procedures for the analysis of shear force (SF) were performed according to AMSA (2016). Significant effects for the SC were assessed using the PDIFF option, significance was declared when $P < 0.05$, and means were compared by the Tukey test (5% of significance).

Table 1.

Effect of sex classes on sensory traits, and Warner-Bratzler Shear Force of beef aged for 14 days

Variable	Sex Classes			SEM	P-value
	Steer	Heifer	Bull		
Overall Liking	7.24 ^a	6.97 ^{ab}	6.83 ^b	0.08	0.03
Flavor	7.08	6.83	6.84	0.08	0.17
Flavor Intensity	3.14	3.11	3.03	0.03	0.29
Tenderness	7.32 ^a	6.87 ^{ab}	6.56 ^b	0.09	<0.01
Tenderness Intensity	4.02 ^a	3.80 ^{ab}	3.58 ^b	0.05	<0.01
Juiciness	7.03 ^a	6.81 ^{ab}	6.63 ^b	0.08	0.02
Juiciness Intensity	3.87 ^a	3.60 ^b	3.55 ^b	0.04	<0.01
WBSF 14 days, kg	6.20 ^b	6.55 ^b	7.67 ^a	0.20	<0.01

- Distinguished superscript lower-case letters differ by Tukey test with $P < 0.05$.
- SEM: Standard Error of the Mean.
- WBSF 14 days: Warner-Bratzler Shear Force at 14 days of aging

III. RESULTS

Steaks from steers were scored by panelists as more tender and juicier ($P < 0.05$) than bull counterparts; however, no differences in flavor and flavor intensity were detected ($P < 0.05$). On the other hand, steaks from heifers presented intermediate values with no differences compared with the other SC ($P < 0.05$), except for juiciness intensity that was equal to bull steaks. Steer and heifer steaks presented lower SF values than bull steaks. There were no difference for all sensory traits between steaks from heifers and bulls (Table 1). This can be explained by the fact that no difference was found between the SF of steers and heifers.

IV. CONCLUSION

Steers' steaks produced more desirable palatability attributes, followed by heifer steaks, which indicates the possibility of improving consumer acceptance and marketing opportunities for the Brazilian beef industry in quality-oriented niche markets.

Keywords: beef tenderness, consumer preference, sensory analysis, shear force