

COMPARISON OF WARNER-BRATZLER SHEAR FORCE AND SLICE SHEAR FORCE IN SERIALY SLAUGHTERED STEER CARCASSES

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I. OBJECTIVES

Growth promotants are commonly administered to increase rate of weight gain and improve feed efficiency but can increase the incidence of tough beef. The objective of this study was to investigate objective mechanical tenderness of serially harvested steers.

II. MATERIALS AND METHODS

Charolais × Angus steers ($n = 80$) approximately 219 ± 19 d of age were randomized to implant treatments (Revalor-XS on day 0 and day 190 or Control [no implant]) and harvest date in a 2×10 factorial design. Four pairs of steers were randomly allocated to one of 10 harvest dates and harvested in 42-d intervals (0, 42, 84, 126, 168, 210, 252, 294, 336, and 378). Samples of the *M. longissimus dorsi* from the 13th rib section were obtained from the left side of each carcass, aged for 14 d, and frozen at -29°C . Frozen samples were cut into 2.54-cm-thick steaks for Warner-Bratzler shear force (WBSF) and slice shear force (SSF) measurements, and vacuum packaged. Samples were thawed for 24 h at 2°C , initial weight was obtained prior to cooking, and steaks were cooked to an internal temperature of 71°C . After a 5-min cooling period, cooked weights were recorded; WBSF samples were cooled 24 h at 2°C prior to coring and shearing. SSF samples were taken immediately following attainment of cooked weight. All samples were sheared according to American Meat Science Association protocol with a texture analyzer, and peak shear forces were analyzed. Data were analyzed via Pearson correlation and mixed models.

III. RESULTS

There were no treatment × days on feed interactions ($P \geq 0.51$) observed for objective tenderness determined via WBSF or SSF. Peak force values did not differ between Revalor-X (3.65 kg and 15.12 kg) and Control (3.36 kg and 14.86 kg) for WBSF ($P = 0.10$) or SSF ($P = 0.83$), respectively. Peak force via either method was not effected by ($P \geq 0.17$). Moderate correlation was observed between WBSF and SSF ($r = 0.41$). Results from this study indicate that growth promotion had little effect on tenderness.

IV. CONCLUSION

Results from this study indicate that growth promotion had little effect on tenderness.

Keywords: shear force, Warner-Bratzler shear force