

CARCASS MERIT OF FIVE BRAHMAN-INFLUENCED BREED TYPES AND EFFECTS OF ELECTRICAL STIMULATION AND WET AGING ON PALATABILITY OF GRASS-FED BULLOCK MEAT

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I. OBJECTIVES

The study objective was to explore differences in carcass traits and meat quality among 5 types of Brahman-influenced bullocks, and to examine the influence of electrical stimulation and/or wet aging on shear force and sensory traits of bullock meat.

II. MATERIALS AND METHODS

Fifty grass-fed bullocks of 5 breed types (Brahman, F1 Angus, F1 Chianina, F1 Romosinuano, and F1 Simmental) were harvested at ca. 480 kg. Carcasses were split, and the right side of each carcass was electrically stimulated (ES; 550 V, 60 Hz, 2 amp). At 2 d postmortem, chilled carcasses were evaluated, a 20-cm-long striploin roast (*longissimus lumborum*) from each side was excised and subsampled to yield eight 2.5-cm-thick steaks in 4 segments of 2 steaks each. The 8 steaks from each roast were allocated to each of the two (2-d or 10-d) aging treatments (a pair for descriptive sensory analysis and another pair for Warner Bratzler shear force [WBSF]) vacuum packaged and accordingly identified. Anatomical position bias was avoided by alternating analysis designations (WBSF and descriptive sensory analysis) and by rotating ES or aging treatments. Steaks representing control samples (2-d aging time) were immediately blast-frozen and stored at -30°C for subsequent analyses. The other steaks representing the 10-d aging (AG) treatment were stored at 4°C and, at the end of that period, were frozen (-30°C) and stored for further analysis. Data were analyzed with a split-plot arrangement.

III. RESULTS

Except for the fat cover finish score, carcass traits were not affected by breed type ($P > 0.05$; ca. A maturity, 1.44-mm backfat thickness, "traces" of marbling). Carcasses of Brahman exhibited the most abundant fat cover of all breed types ($P < 0.01$). No difference in WBSF was detected between breed types ($P > 0.05$). Steaks from F1 Angus scored highest ($P < 0.05$) for muscle fiber tenderness (MFT; "slightly tender"), overall tenderness (OT; "slightly tough"), and amount of connective tissue (ACT; "moderate"), whereas F1 Simmental scored lowest in MFT ("slightly tough"), OT ("moderately tough"), and ACT ("slightly abundant"). Brahman, F1 Chianina, and F1 Romosinuano did not differ ($P > 0.05$) in sensory attributes and exhibited intermediate values. Bullock steaks were more responsive to ES + AG in WBSF reduction and increased scores for MFT ("slightly tender"), OT ("slightly tough"), and ACT ("moderate") compared with other postmortem treatments ($P < 0.05$). ES + AG steaks reached the largest

proportion (72%) of the “tender steaks” class (<4.09 kg WBSF) compared to those from the AG (48%), ES (36%), and control (24%) groups ($P < 0.01$).

IV. CONCLUSION

Because of their superiority in tenderness, steaks from F1 Angus are expected to be more acceptable than those from F1 Simmental. The combined treatment of ES + AG resulted in the most effective postmortem treatment for tenderizing bullock meat of *Bos indicus* influence.

Keywords: beef palatability, bullock, crossbreeding, electrical stimulation, vacuum aging