EMPTY BODY COMPOSITION OF STEERS IMPLANTED WITH TRENBOLONE ACETATE + ESTRADIOL-17β VERSUS NON-HORMONE-TREATED CATTLE ACROSS MULTIPLE MARKETING ENDPOINTS

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I. OBJECTIVES

Administration of growth-promoting implants has been shown to alter chemical composition of the empty body in beef cattle. A serial harvest study evaluated days on feed (DOF) and trenbolone acetate + estradiol-17β administration on empty body composition across various harvest endpoints.

II. MATERIALS AND METHODS

Charolais × Angus steers ($n = 80$; start of trial body weight [BW] 271 ± 99 kg) were randomly allocated to implant treatment and harvest date in a 2 × 10 factorial design. Steers were paired to minimize variation in genetic group, initial BW, frame score, and adjusted final BW. Within each pair, a steer was randomly allocated to one of 2 treatments: implanted with Revalor-XS (REV) on day 0 and day 190 or nonimplanted control (CON). Eight steers comprising 4 pairs were randomly assigned to one of 10 harvest dates at day 0, 42, 84, 126, 168, 210, 252, 294, 336, and 378 DOF. Empty body composition was determined via proximate analysis of blood, hide, internal cavity components (all thoracic and abdominal components dissected and homogenized), bone, and carcass soft tissue (all lean and fat dissected and homogenized from the whole carcass). Proximate analysis of each tissue was multiplied by mass to assimilate empty body percentages of moisture, crude protein, ether extractable fat (EBF), and ash. Data were analyzed using mixed models with day 0 BW as a covariate.

III. RESULTS

No Treatment × DOF interaction was exhibited ($P \geq 0.17$) for any variable. Empty body moisture decreased ($P < 0.01$) in a quadratic fashion at approximately 0.04%/d beginning at 61.9% on day 0 and ending at 47.8% on day 378. Empty body protein decreased ($P < 0.01$) linearly by approximately 0.007%/d beginning at 18.7% on day 0 and ending at 16.0% on day 378. EBF increased ($P < 0.01$) in a quadratic fashion at approximately 0.05%/d beginning at 14.0% on day 0 until day 294 and plateaued at approximately 32.0% through day 378. Empty body ash remained constant ($P = 0.52$) across the feeding period (5.5%–5.8%). Empty body protein (16.7% CON vs. 17.4% REV) and empty body ash (5.4% CON vs. 5.7% REV) were greater ($P < 0.01$) for REV steers, and empty body moisture (50.7% CON vs. 51.6% REV) tended to be greater ($P = 0.07$) for REV steers. In contrast, EBF (25.3% REV) was greater ($P < 0.01$) for CON steers (27.3%). Ratio of empty body protein to EBF was 0.61:1 for CON steers compared to 0.69:1 for REV steers ($P < 0.05$) while decreasing ($P < 0.01$) approximately 0.002/d beginning at 1.34 on day 0 and ending at 0.52 on day 378.

IV. CONCLUSION

Composition of gain is important to commercial industry in regard to protein and fat accretion changing over time. These data indicate that growth-promoting implants alter composition of gain during the finishing period.

Keywords: chemical composition, fat, implants, protein, serial harvest