NON-CARCASS COMPONENT YIELDS OF TRENBALONE ACETATE + ESTRADIOL-17β IMPLANTED STEERS VERSUS NON-HORMONE TREATED STEERS ACROSS VARIOUS HARVEST ENDPOINTS

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I. OBJECTIVES

Growth-promoting implants containing trenbolone acetate (TBA) and estradiol-17β (E_2) are commonly administered to improve rate of weight gain and feed efficiency of beef cattle. Although non-carcass components are not considered lean muscle foods or contribute to traditional carcass value, many (1) are highly metabolic organs that determine efficiency of the live animal, (2) fulfill nutritive roles in global society, and (3) are important raw materials that support numerous industries. A serial-harvest study was conducted to investigate the growth of non-carcass components of implanted or nonimplanted Charolais × Angus steers.

II. MATERIALS AND METHODS

Steers (n = 80) were paired by genetic similarity and projected endpoint composition and were randomly appointed to harvest date (0, 42, 84, 126, 168, 210, 252, 294, 336, or 378 days on feed [DOF]). Steers within pairs were then randomly allocated to implant treatment; REV received a Revalor-XS (200 mg TBA/40 mg E_2) on day 0 and day 190, whereas control (CON) received no implant throughout the study. A 2 × 10 factorial treatment structure was utilized in a completely randomized experimental design. Variables were analyzed using mixed models. Four pairs (n = 8 steers) were harvested upon each feeding endpoint. Weights of non-carcass components were obtained upon removal, and gastrointestinal tracts were separated into individual components and weighed, flushed clean, and reweighed to obtain empty tract weight.

III. RESULTS

No treatment × DOF interactions ($P \geq 0.65$) were observed for body or hot carcass weights (HCW), fill or dressed yield. Main effects of implant were observed; shrunk body weight (SBW), empty body weight (EBW), and HCW were 6% greater ($P < 0.01$) in REV steers than CON, indicating a consistent increase in tissue components. No treatment effects ($P \geq 0.14$) were observed for fill or dressed yield; however, SBW and HCW increased ($P \leq 0.01$) and percentage fill decreased as a main effect of DOF. Absolute fill weight was not affected ($P \geq 0.51$) by DOF. A REV × DOF interaction tended to occur ($P = 0.07$) for the absolute weight of the kidneys. Implanted animals had greater ($P \leq 0.05$) absolute mass of blood, head, hide, liver, spleen, omasum, small intestine, heart, total viscera, total splanchnic tissue, and total offal and tended to have a heavier ($P \leq 0.08$) tongue and pizzle than CON steers. Implanted steers also had diminutive ($P = 0.05$) thymus glands and less ($P = 0.02$) kidney-pelvic-heart fat than nonimplanted steers on an absolute weight basis. Absolute weight of the spinal cord and the small intestine remained constant across DOF; all other tissue weights increased ($P \leq 0.05$) with DOF. No REV × DOF interactions ($P \geq 0.15$) occurred on an EBW basis.

However, the brain, limbs, abomasum, thymus, and kidney-pelvic-heart fat of REV steers weighed less ($P \leq 0.05$) on an EBW basis, and the lungs and trachea tended ($P = 0.09$) to weigh less than those of CON steers. Conversely, the reticulum increased ($P = 0.03$) approximately 7% on an EBW basis, and the pizzle tended to weigh more ($P = 0.09$) in REV than CON. Weight of oxtail on an EBW basis was similar for all DOF, while the gallbladder, esophagus, and spleen tended ($P \leq 0.10$) to vary and all other variables differed ($P \leq 0.04$) across DOF.

IV. CONCLUSION

These results suggest that TBA + E_2 implants increase SBW and HCW and many non-carcass components while reducing excess internal fat accumulation.

Keywords: implant, non-hormone-treated cattle, non-carcass components, serial harvest