

40 Color stability of dark-cutting beef enhanced with lactic acid. J.T. Sawyer*¹, J. K. Apple¹, Z. B. Johnson¹, R. T. Baublits², and J. W. S. Yancey¹, ¹*Department of Animal Science, University of Arkansas, Fayetteville,* ²*Tyson Foods Inc., Springdale, AR.*

Dark-cutting (DC) beef is typically characterized by a high postmortem pH, increased water-binding capacity, sticky surface texture, and an undesirable dark red to almost black lean color. Furthermore, retail cuts originating from dark-cutting beef are often described as a meat that fails to bloom/brighten after exposure to oxygen. Therefore, the objectives of this study were to evaluate the effect of lactic acid (LA) enhancement at varying levels, with or without 0.5% sodium chloride on color stability of DC beef. Strip loins (IMPS #180) from DC (mean pH = 6.56) and normal pH (NDC; mean pH = 5.25) carcasses (n = 30) were selected at a commercial beef processing plant, subsequently cut in half, and DC sections were injected to 110% of raw weight with solutions containing 0.25, 0.50, 0.75, or 1.00% LA and 0.0 or 0.5% NaCl. Steaks (2.5-cm-thick) were cut from each section, placed onto foam trays, and overwrapped with a PVC film. Packaged enhanced DC and unenhanced NDC steaks were evaluated for visual color by a 5-person, trained panel, instrumental color using a Hunter MiniScan XE, and lipid oxidation (TBARS) on d 1, 3, 5 of simulated retail display (4 °C and 1600 lux warm white lighting). Data were analyzed as a completely randomized design with the mixed model procedure of SAS (SAS Inc., Cary, NC). For all variables, least-squares means were separated with the PDIFF option when significant ($P < 0.05$) F-values were observed. Visual scores for overall steak color during display period indicate that steaks enhanced with lower levels of LA were similar ($P > 0.05$) to NDC steaks after 1 d of retail display. Discoloration scores followed a similar pattern as overall color, with minimal differences ($P > 0.05$) among the steaks treated with the lower levels of LA and NDC steaks. Interestingly, as LA concentration increased overall color and percentage discoloration scores decreased ($P < 0.05$). Lightness (L^*) values were lowest ($P < 0.05$) for untreated DC steaks, whereas L^* values of steaks from NDC sections and the lowest enhancement levels did not differ ($P > 0.05$). Moreover, NDC steaks were redder (greater a^* values; $P < 0.05$) than enhanced DC steaks regardless of LA concentration. As expected, TBARS values increased ($P < 0.05$) during the 5 d of simulated retail display; however, TBARS values were similar ($P > 0.05$) among LA enhancement treatments. Results from this study indicate the fresh beef color improvements associated with LA enhancement may improve the marketability and value of beef cuts from DC carcasses.