P-144

Effects of Dietary Vitamin E Supplementation on Water-Holding Capacity of Displayed Beef

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The effects of dietary vitamin E supplementation on lipid oxidation and various water-holding capacity (WHC) measurements in beef were investigated using 9 crossbred steers which were supplemented with dl-α-tocopheryl acetate at a target dosage of 0, 500 and 2,000 mg/steer/day for 126 days. Steers were slaughtered and strip loins removed at 24 hr postmortem (PM), vacuum packed and stored at 4℃. At 14 days PM, the longissimus lumborum was dissected from the loin and slices (1cm thick) prepared. Beef cores (12cm2×1cm thick) were removed from the slices and placed onto fiberboard trays, overwrapped with oxygen-permeable PVC film, and displayed at 4℃ for 8 days. These samples were used to measure lipid oxidation (TBARS), total water loss, % expressible moisture, % drip loss and % cooking loss. TBARS values of vitamin E treated samples were significantly ($p<0.05$) lower than those of controls after 4 days storage. However, there were no significant ($p>0.05$) differences in % expressible moisture among the three vitamin E treatments. Furthermore, there were no effects of vitamin E on the other three WHC measurements of drip loss, cooking loss and total water loss. For a given day of evaluation, all three measurements were the same ($p>0.05$). Results suggest that WHC of beef is not affected by dietary supplementation of vitamin E, and is not associated with lipid oxidation in the cell membrane.