

2017 Reciprocal Meat Conference – Meat and Poultry Quality

Meat and Muscle Biology™



Improving Shelf Life of Fresh Bison Steaks Treated with Oregano and Rosemary Essential Oils

V. Sood*, W. Tian, C. Narváez-Bravo, S. D. Arntfield, and A. Rodas-González

Department of Food Science, University of Manitoba, Winnipeg, Canada

Keywords: bison, color stability, essential oils, oregano, rosemary
Meat and Muscle Biology 1(3):64

doi:10.221751/rmc2017.058

Objectives

Bison meat color is dark, consistently unstable and discolors rapidly under aerobic packaging during retail display. Consequently, it is important to explore available technologies for use in bison meat which might be successful in improving shelf-life attributes. This study was conducted to examine the effects of essential oils (rosemary and oregano) on color and oxidative stability of bison strip loins in retail display conditions.

Materials and Methods

Strip loins ($n = 10$) from grade A1 bison carcasses were obtained and aged for 7 d at 4°C. Before injecting the subprimal with essential oils (at 7 d postmortem), an initial steak (2.5 cm thick) was cut from each strip loin for metmyoglobin reducing activity (MRA) and oxygen consumption (OC) analysis. The rest of the loin was cut into 3 equal portions. Each portion was weighed, pH and temperature were determined and then allotted to 1 out of 3 treatments with essential oils (non-enhanced, 0.05% rosemary extract and 0.08% oregano extract in the final product at a 10% pump level). Treatments were evaluated for pH, drip loss, MRA, OC, lipid oxidation (TBARS) and color stability (based on instrumental and sensory color measurements) on steaks which were PVC-overwrapped and placed in retail cabinets for 5 d at 3°C under LED (light emitting diodes) with intensity 1240 lx.

Results

The pH values were not different among treatments at d 0 and d 4 ($P > 0.05$); however, the pH of all samples decreased ($P < 0.05$) by the end of the retail display period. The drip loss was higher in oregano and rosemary than control steaks ($P < 0.05$). Oregano steaks presented lower OC and higher MRA values than the control and rosemary steaks ($P < 0.05$), but no difference between the control and rosemary steaks was detected ($P > 0.05$). Oregano steaks presented a stable red color with less discoloration during the retail display period than the control and rosemary steaks ($P < 0.05$). These results were in accordance with lightness (L^*), chroma (C) and hue (H) results obtained in the instrumental color analysis. With respect to TBARS values, oregano steaks decreased lipid oxidation compared to the control and rosemary steaks ($P < 0.05$).

Conclusion

These results indicated that the essential oil from oregano can considerably improve color stability of bison steaks due to its antioxidants properties and ability to increase MRA capacity in the bison meat.