



## Alternative Merchandising Strategy of the Beef Top Round

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**Keywords:** color, lipid oxidation, tenderness, top round

Meat and Muscle Biology 3(2):174

### Objectives

The study objectives were to compare the deep (D) vs. superficial (S) portions of the beef top round (NAMI #169A PSO1), *semimembranosus* (SM) muscle, for tenderness, lipid oxidation, and color.

### Materials and Methods

To simulate the retail setting, USDA Choice top rounds ( $n = 12$ ) were purchased from a commercial food distributor and delivered to the University of Idaho Meat Science Laboratory under refrigeration. Top rounds were aged for 21 to 24 d from their pack date prior to removing the SM for subsequent analysis. Four steaks were cut from each SM proximally to distally. To account for steak location, steaks were systematically assigned to one of the following analyses; Warner-Bratzler Shear Force (WBSF) measurement, lipid oxidation using the Thiobarbituric Acid Reactive Substances (TBARS) method, subjective and objective color analysis on the whole steak to calculate color uniformity (two-toning), and subjective and objective color of a steak separated into D and S portions. The separating cut was made approximately two inches from the superficial edge of the steak. After cutting, WBSF steaks were cooked on clamshell grills to an internal temperature of 71°C. Steaks were then chilled overnight before 6 cores were sheared perpendicular to the muscle fiber direction on a WBSF machine. Steaks were sampled and evaluated for TBARS on Days 0 and 4 of retail display, while color was evaluated subjectively and objectively on Days 0, 1, 2, 3, and 4 of retail display. Steaks used for TBARS and color analysis were placed on white Styrofoam trays, overwrapped with an oxygen permeable PVC film, and

displayed in a glass-fronted retail display case at 3°C for 4 d to simulate retail display. Data were analyzed using the mixed models procedure of the Statistical Analysis System (SAS Institute, Inc., Cary, NC) and significance was determined at  $P < 0.05$ .

### Results

Mean Warner-Bratzler shear force values were lower ( $P = 0.0012$ ) in the S (4.2 kg) than the D (5.2 kg) portion of the SM. On Day 0, D and S portions had similar TBARS values (0.172 vs. 0.118 mg MDA/kg Meat); yet, by Day 4, the D portion had substantially greater TBARS values than the S portion (0.497 vs. 0.194 mg MDA/kg Meat; treatment  $\times$  day of retail display interaction,  $P < 0.0001$ ). The D portion was lighter (higher L\*;  $P < 0.0001$ ) colored than the S portion. Furthermore, the D portion became less red compared to the S portion during simulated retail display (treatment  $\times$  day of retail display interaction;  $P < 0.0001$ ). The whole steak had greater levels of two-toning initially, as well as throughout the 4 d of retail display, compared to the D and S portions (treatment  $\times$  day of retail display interaction;  $P < 0.0001$ ). Therefore, cutting top round steaks into a D and S portion would result in the steaks being more uniform in color. Additionally, the S portion has longer shelf-life as well as improved tenderness compared to the D portion.

### Conclusion

In conclusion, the S portion may be able to generate a premium compared to the whole steak at the retail level because of its superiority in color to the D portion and more uniform color compared to the whole steak.