2016 Reciprocal Meat Conference – Meat and Poultry Quality

Meat and Muscle Biology™

# Characterizing Products from the Beef Rib Resulting From an Alternative Carcass Break

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**Keywords:** alternative carcass break, rib break
Meat and Muscle Biology 1(2):53 **doi:10.221751/rmc2016.050**

## Objectives

This study was aimed at investigating the impacts of separating the beef rib from the chuck between the 4th and 5th rib versus the 5th and 6th ribs on beef tenderness, connective tissue content, steak composition, and product yield.

## Materials and Methods

Thirty USDA Choice carcasses were selected at random for inclusion in the study. Alternating sides of each carcass was fabricated into either an 8-rib rib separated from the chuck between the 4th and 5th rib or a traditional 7-rib rib separated from the chuck between the 5th and 6th rib. All comparisons between 8-rib and 7-rib ribs were made within animal. All ribs were collected and transported under refrigeration to the Colorado State University for fabrication. Comprehensive cutout data was collected from conversion of each individual NAMP 107 oven-prepared rib to a NAMP 112 boneless ribeye roll. Within 7 d of product collection, the boneless ribeye rolls were transported to a steak portioning facility, and all pieces were cut into equally portioned ribeye steaks. At the time of portioning, steak measurements were collected and recorded. All weight and steak yield comparisons were made between 7-rib and 8-rib ribs. Following steak portioning, an image of each steak was obtained on a gridded background. Individual images were analyzed using image software capable of making measurements by quantifying pixel size (Image J). From each steak image, all meaningful dimensional measurements were obtained. Following image capture, steaks were individually identified, packaged, frozen and stored for shear force evaluations.

Steaks were thawed and cooked to a peak internal temperature of 71°C using a combination convection oven. Following cooking, the peak internal temperature was recorded for each steak. Warner-Bratzler Shear Force (WBSF) values were obtained for the primary muscles in every steak (*longissimus, complexus, and spinalis*). A single mean WBSF value was obtained and averaged for each muscle individually.

Comparisons of least squares means for product yield and steak cutting yield were made between 8-rib and 7-rib ribs. Means for WBSF and steak measurements were compared by steak location within the portioned 8-rib ribs only.

## Results

The 112 ribeye rolls resulting from 8-rib ribs were 5.26 cm longer, which resulted in 2.8 more steaks per carcass, on average. Additionally, 112 ribeye rolls resulting from 8-rib ribs were 558 g heavier than 7-rib ribeye rolls. Steak location did not affect WBSF values of the *complexus, or spinalis*, but steak location did affect ($P = 0.0077$) the WBSF values of the *longissimus*. Even though the WBSF of the *longissimus* was affected by steak location, there were no meaningful trends by steak location and the values were not affected by alternating the fabrication style. The data indicated that tenderness and eating quality was not affected by fabrication style. As expected, the size of the *longissimus* decreased toward the anterior end of the ribeye rolls, and the size of the *complexus* increased inversely with the size of the *longissimus*. Most notably, the amount of intermuscular fat (kernel or star fat) was less in the most anterior steaks than in steaks that would normally appear on the ends of traditionally cut, 7-rib ribeye rolls.

## Conclusion

Changing the fabrication style would not detrimentally impact the eating qualities of ribeye steaks but would add significant weight and value to the rib.

 