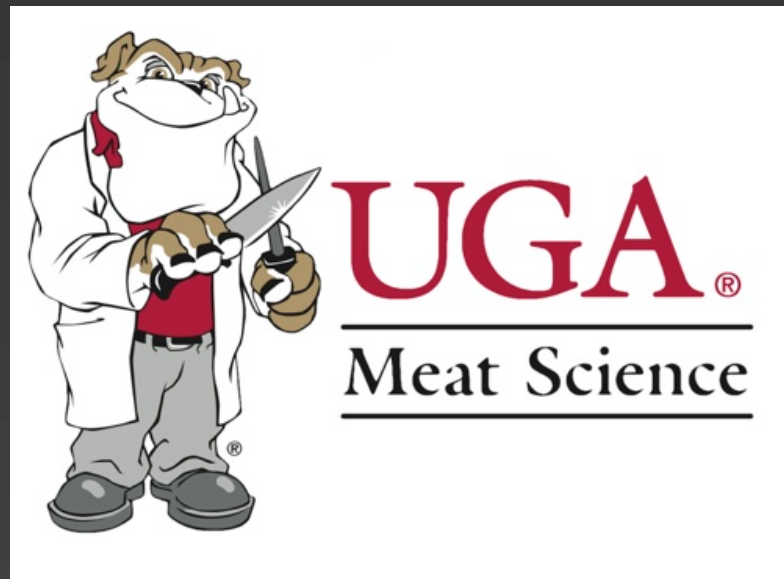




# Effect of steak location on shelf-life and quality attributes of the beef *biceps femoris* value cut

A.M. Stelzleni, R.J. Kersey\*, J.R. Segers, R.L. Stewart, Jr.  
University of Georgia, Athens Georgia



For a copy of this poster visit [www.StelzLab.org](http://www.StelzLab.org) or scan using smart phone:

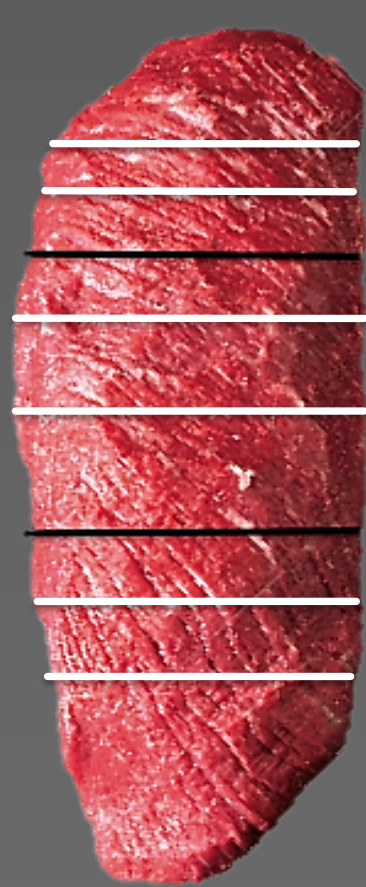
## BACKGROUND

- Round cuts have been held back due to perception of tenderness and flavor
- Round cuts are more complex and may require different muscle areas be processed individually
- Eventual returns estimated at \$20-30/head (industry value; CattleFax 2011)

## OBJECTIVE

To examine the effect of steak location on shelf-life and quality attributed of the beef *biceps femoris* when sectioned and portion cut perpendicular to the natural orientation of the muscle fibers.

Traditional Cuts

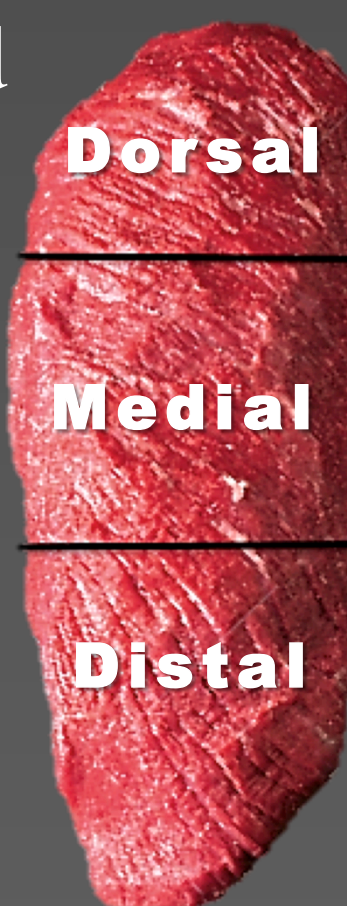


Value Cuts



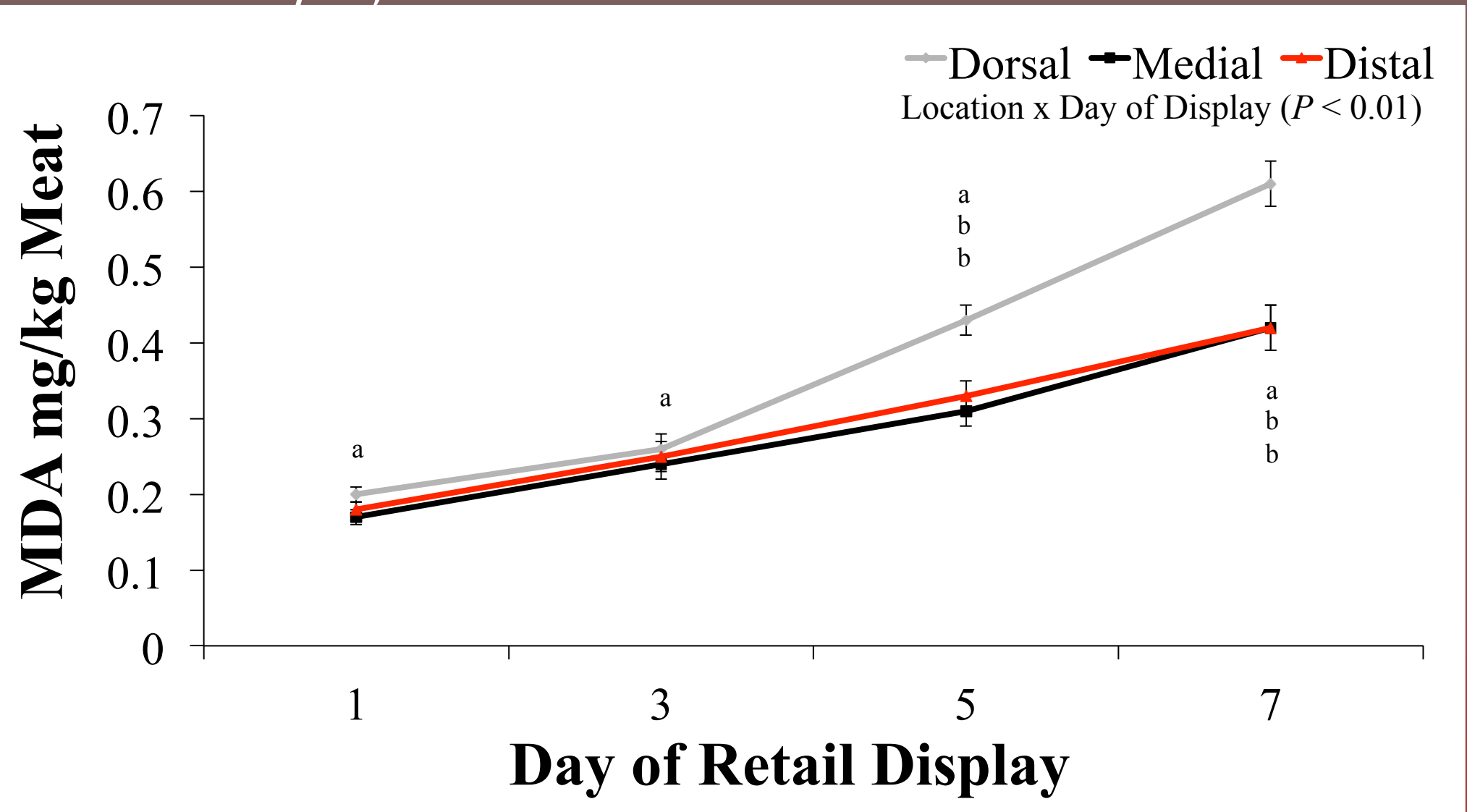
## METHODS AND MATERIALS

- Thirty-six whole beef *biceps femoris* muscles were collected from steers of similar weight, genetic composition and age
- Two days postmortem 36 Bottom Round IMPS 170A were removed, peeled and denuded and the Ishiatic Head was removed to make a 171D, then vacuum packaged
- Four days post mortem the *biceps femoris* muscles were separated into thirds Dorsal (Dor), Medial (Med) and Distal (Dis) based on fiber orientation
- Each section (Dor, Med, Dis) was cut into steaks (2.54 cm) perpendicular to fiber orientation and steaks needed for shelf-life were halved
- One steak assigned WBS and another steak to sensory were vacuumed packaged and aged 21 days (1±1°C)
- Four steaks were randomly assigned to shelf-life 1,3,5,7 d, packaged in PVC and displayed for 7 d (960 lux, 3±1°C) where objective L\*,a\*,b\* color, hue, chroma, 630/580 nm, subjective color, purge, and lipid oxidation were measured on 1,3,5,7 d
- Data were analyzed using Proc Mixed SAS V 9.1
  - Diet and 12<sup>th</sup> rib marbling score evaluated as covariates
  - For shelf-life, location and day of display were dependent variables
  - If DOD by location interaction occurred data were reanalyzed by day
  - Sensory and WBS – location = dependent variable and sensory panelist was added as covariate



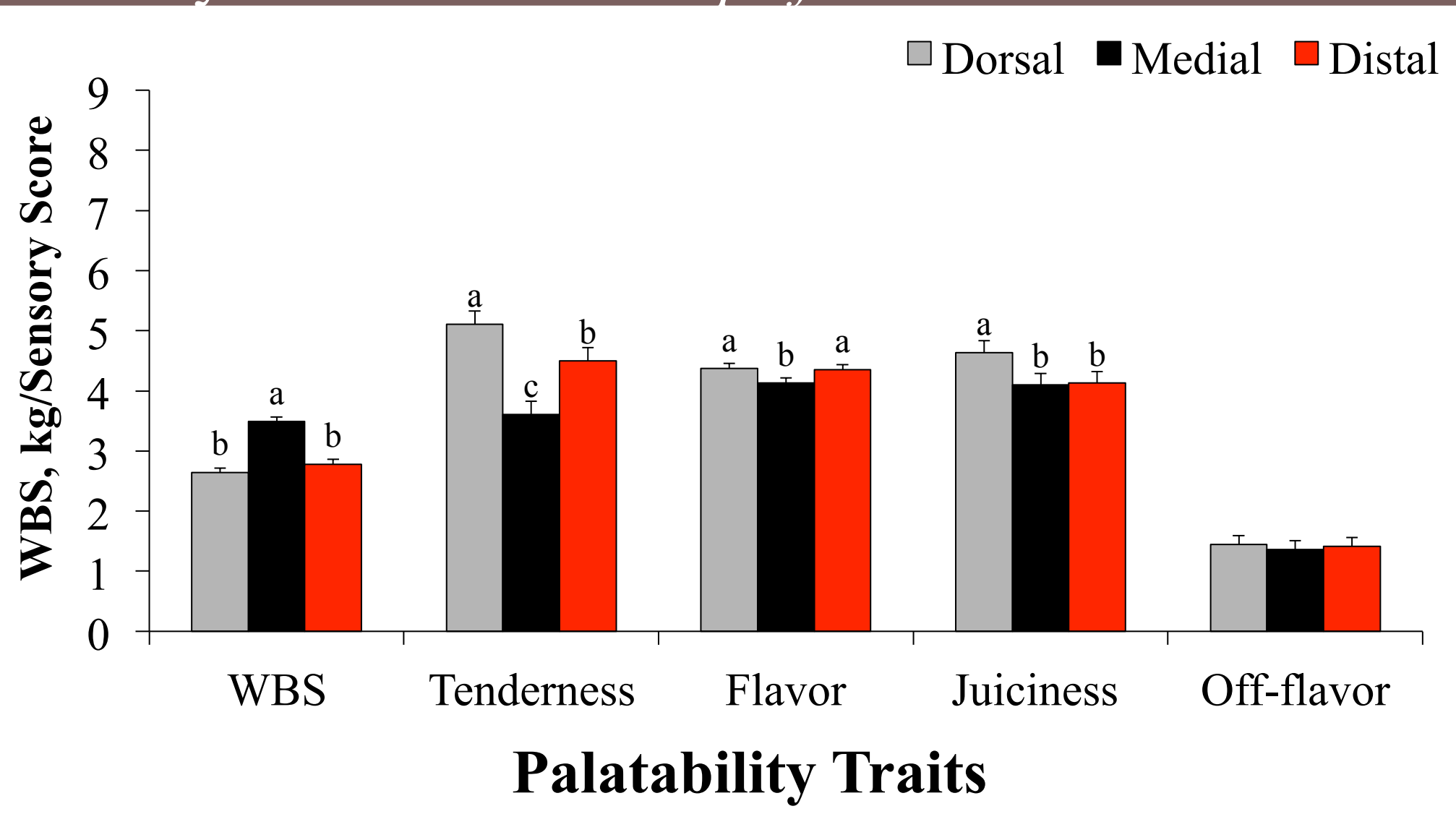
## RESULTS

Figure 1. Effect of Steak Location on Lipid Oxidation of the *biceps femoris*



<sup>ab</sup>Denotes differences within a day for locations ( $P < 0.05$ )

Figure 2. Effect of Steak Location on WBS<sup>1</sup> and Sensory Traits<sup>2</sup> of the *biceps femoris*



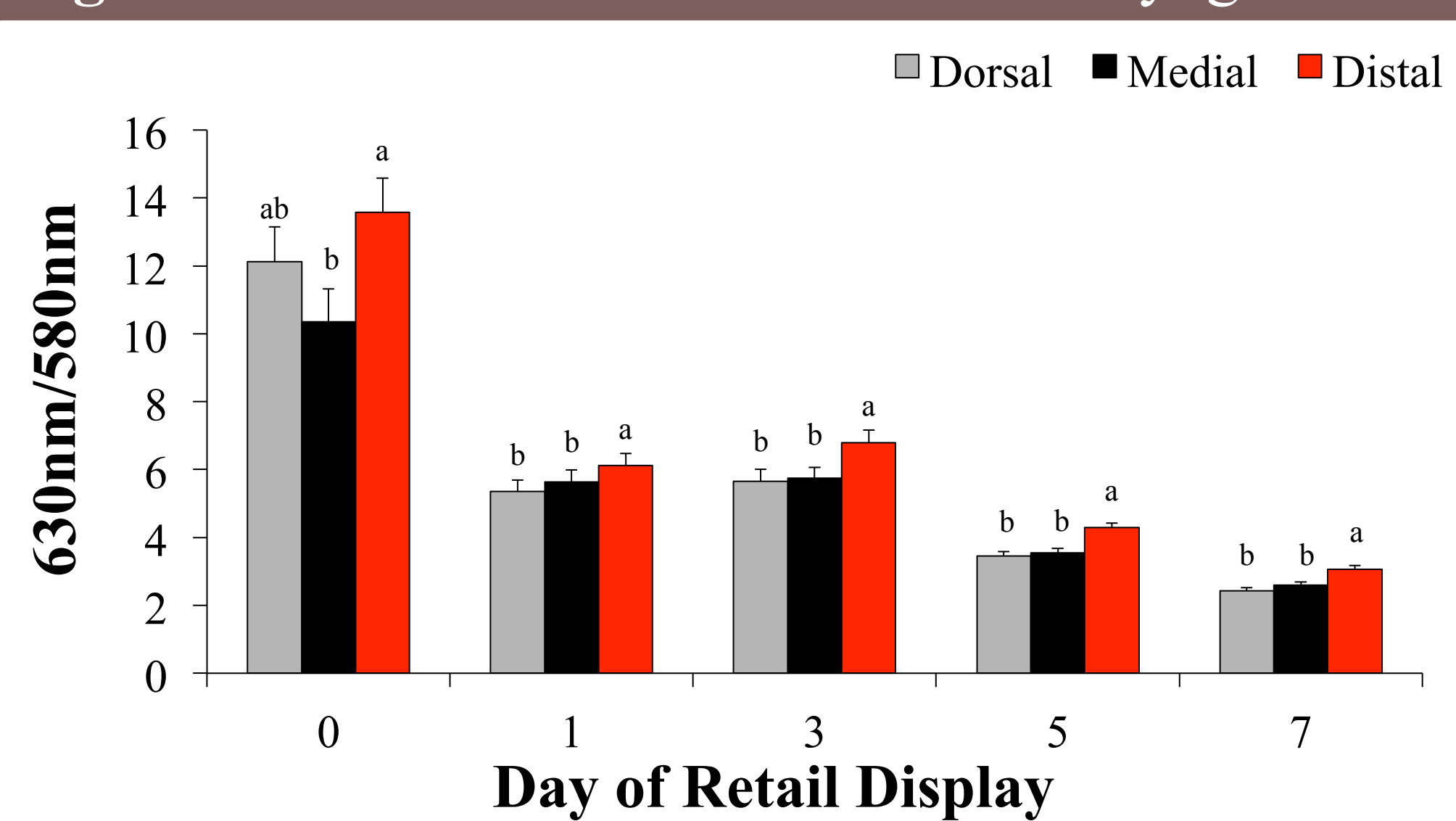
<sup>ab</sup>Denotes differences within day ( $P < 0.05$ )

<sup>1</sup>WBS = kilograms of force required to shear meat core

<sup>2</sup>Sensory tenderness, flavor, & juiciness-1=extremely tough, bland, dry; 8=extremely tender, intense, juicy

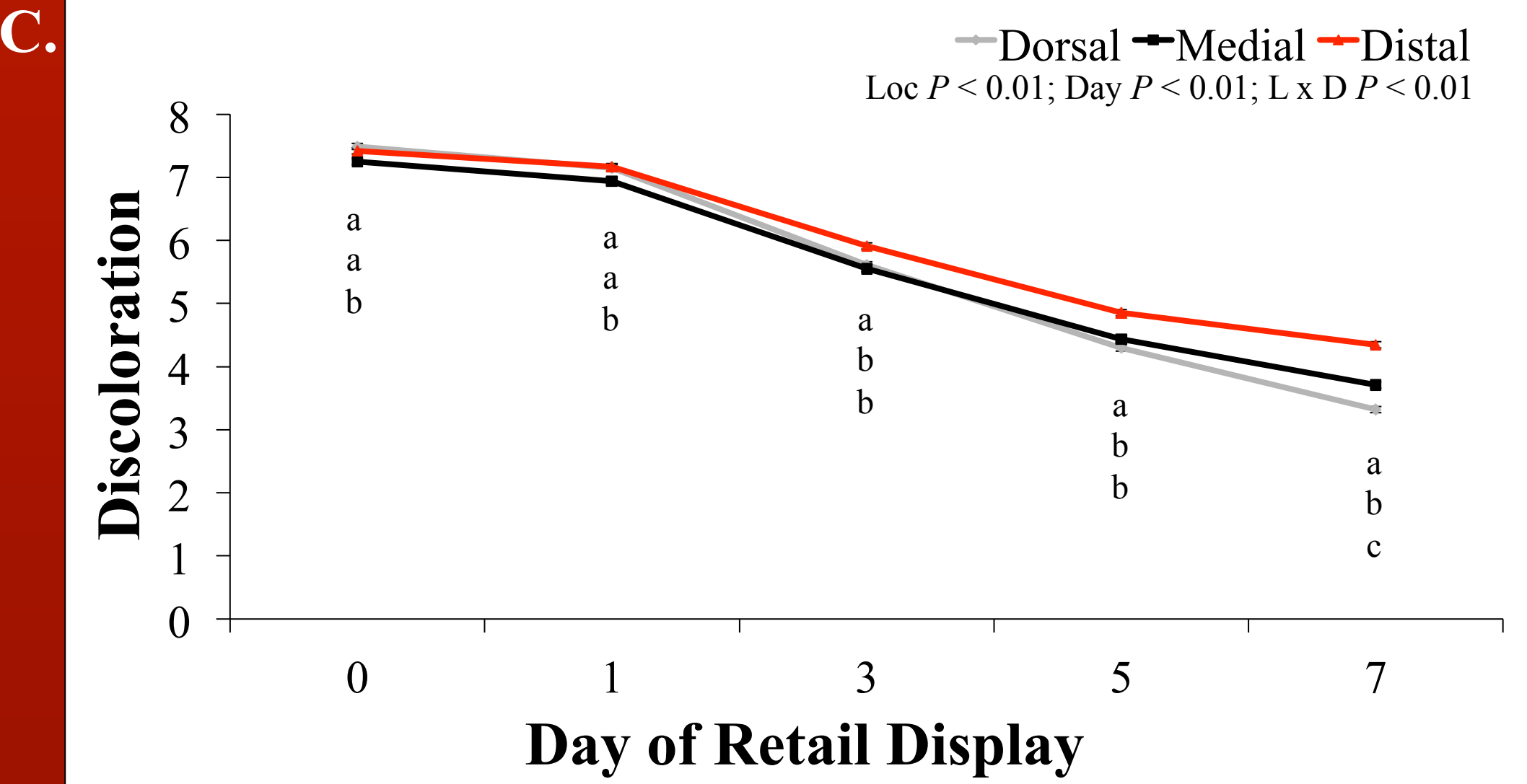
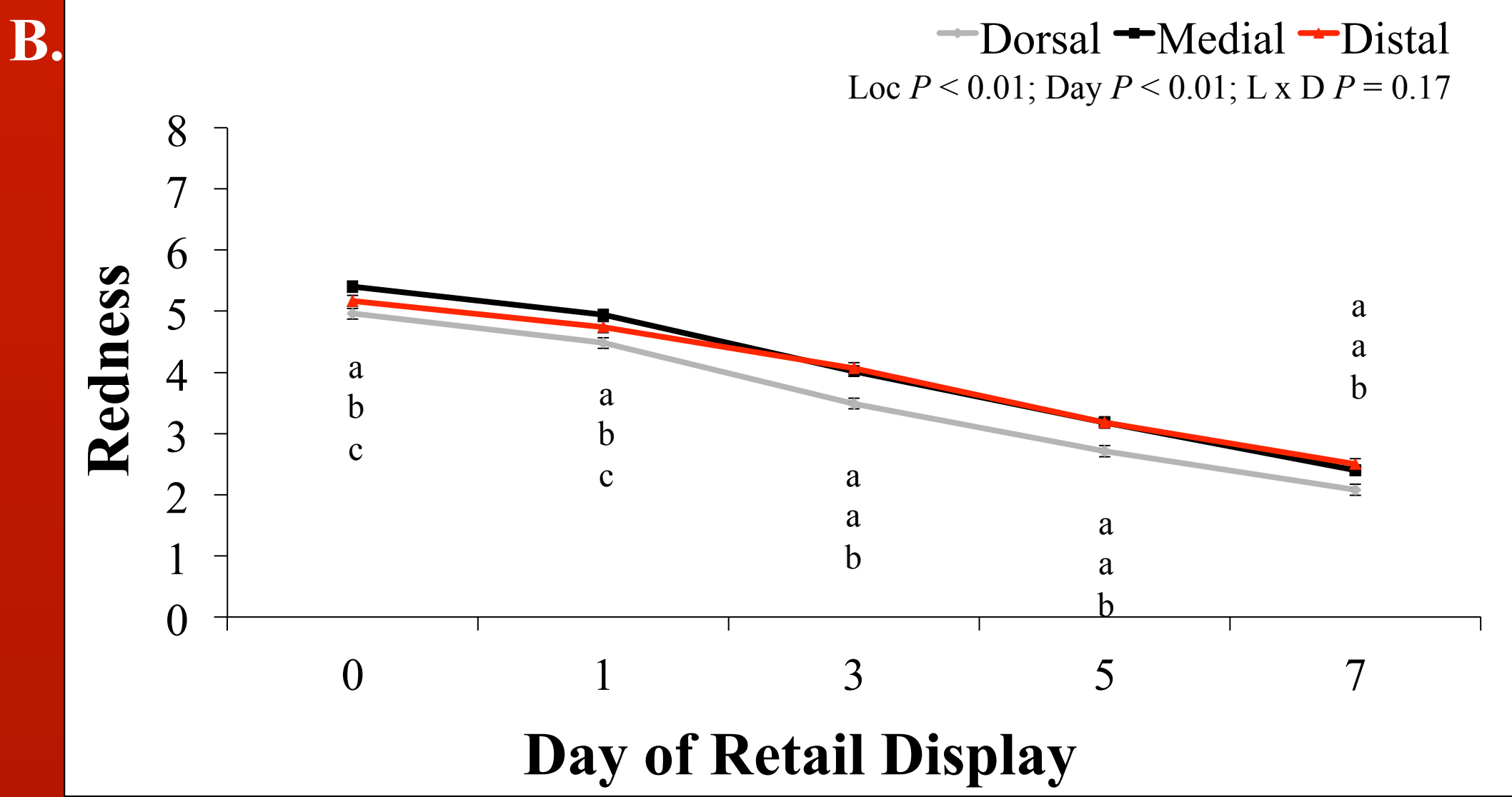
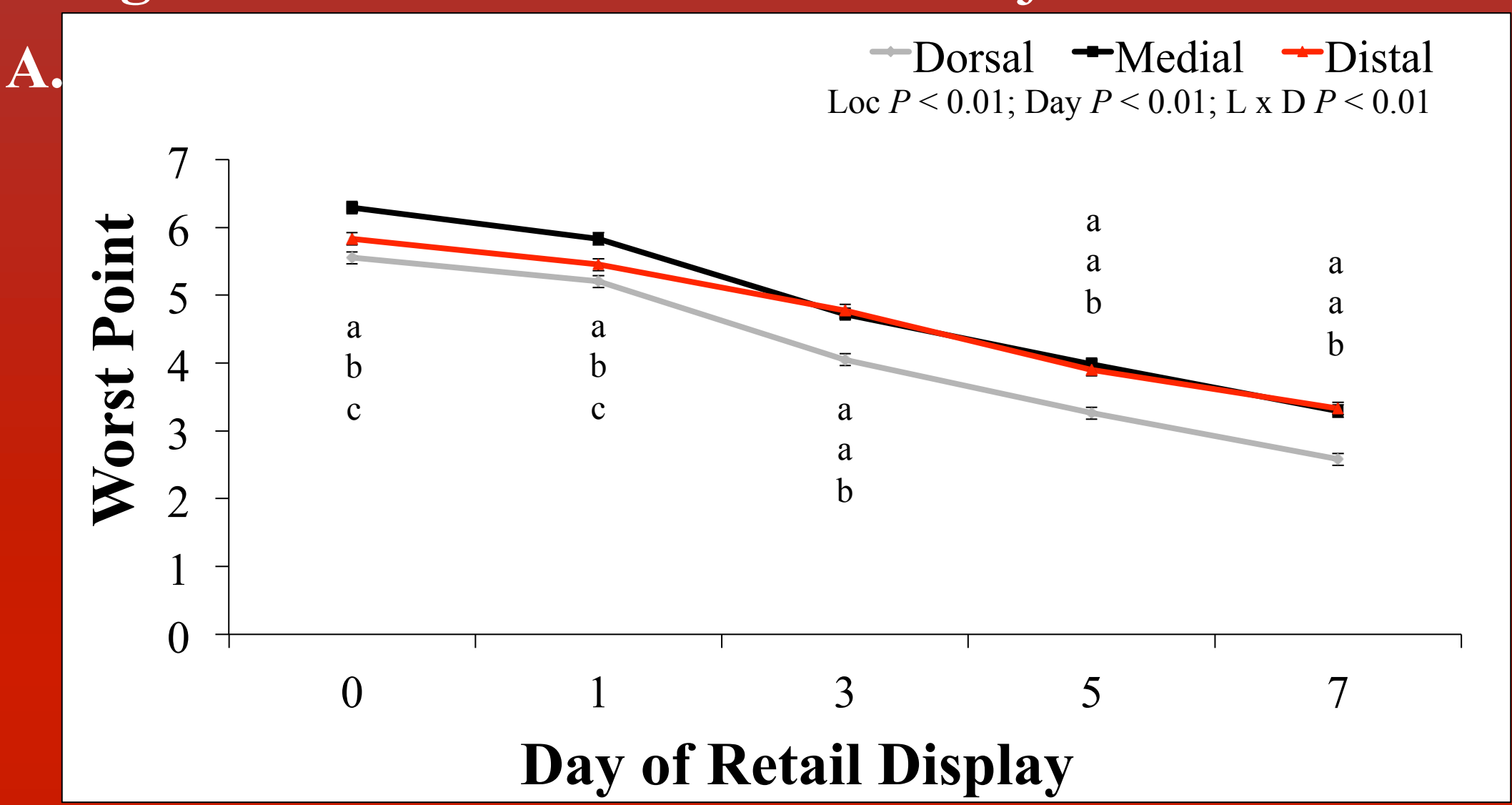
Sensory off-flavor-1=none detected, 6=extreme off-flavor

Figure 3. Steak Location Effect on Metmyoglobin



<sup>ab</sup>Denotes differences within day ( $P < 0.05$ )

Figure 4. Effect of Location on Subjective Shelf-life<sup>1</sup>



<sup>ab</sup>Denotes differences within day ( $P < 0.05$ )

<sup>1</sup>AB: 8-Extremely bright cherry red; 1-Extremely dark red

<sup>2</sup>C: 8-No discoloration; 1-91% to 100% discolored

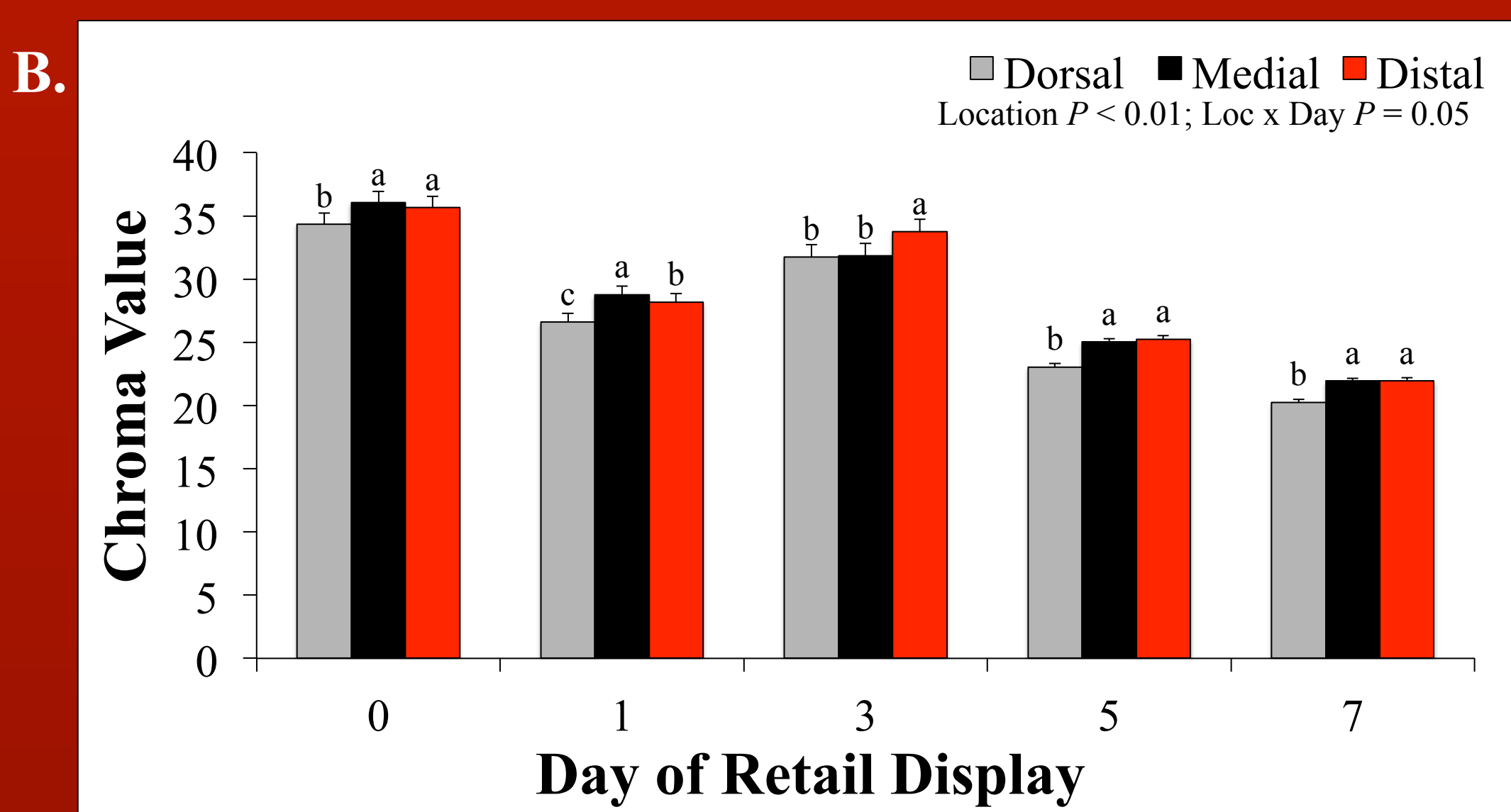
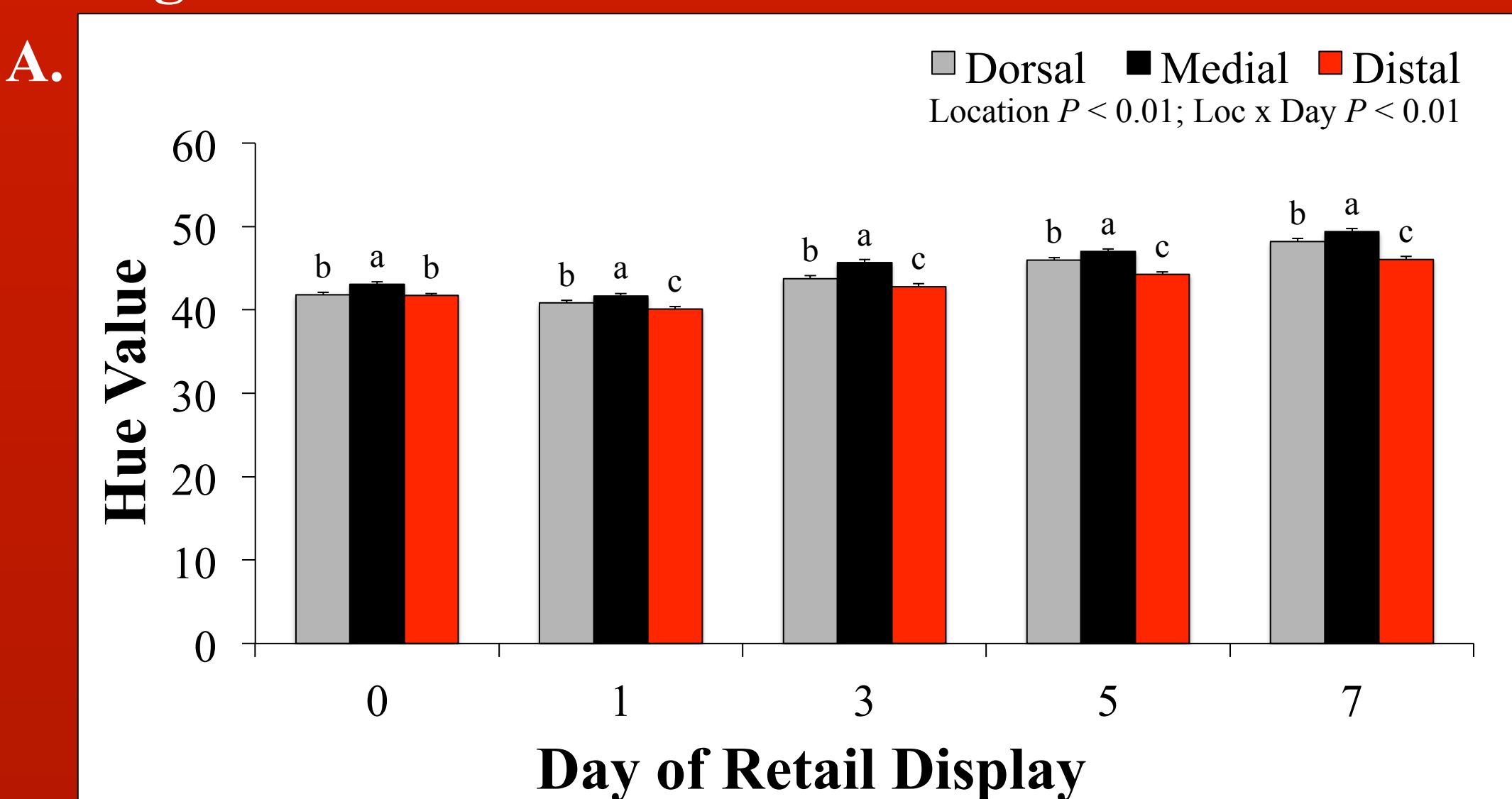
Table 1. Effect of Steak Location on Moisture Loss of the *biceps femoris*

Trait	Location			SEM
	Dorsal	Medial	Distal	
Thaw loss, %	3.42 <sup>b</sup>	2.85 <sup>b</sup>	4.15 <sup>a</sup>	0.28
Cook loss, %	25.94	27.44	26.73	0.80

<sup>ab</sup>Denotes differences ( $P < 0.05$ )

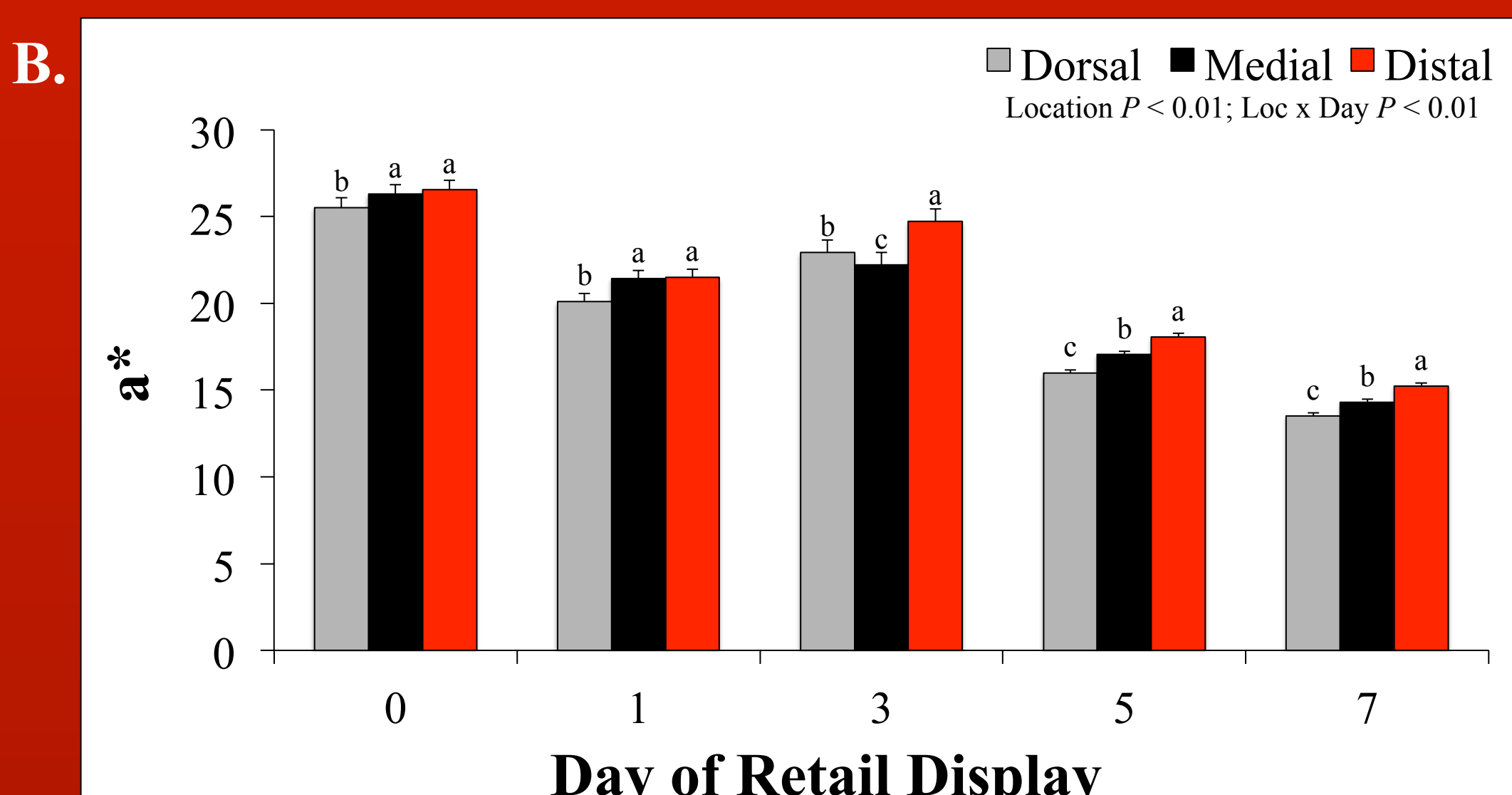
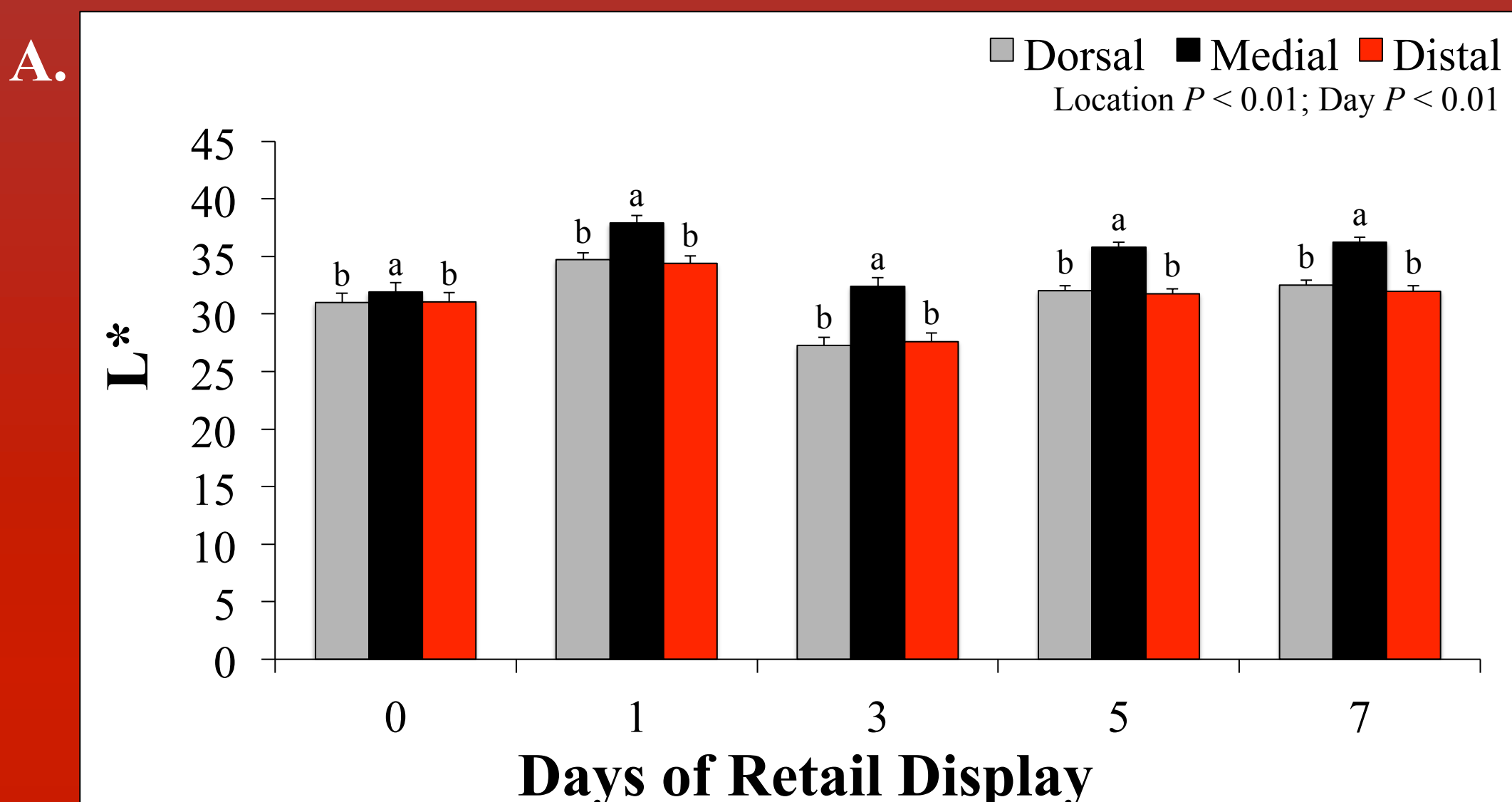
Percent cook loss ( $P = 0.42$ )

Figure 6: Effect of Location on Hue and Chroma



<sup>ab</sup>Denotes differences within day ( $P < 0.05$ )

Figure 5: Effect of Location on L\* and a\*



<sup>ab</sup>Denotes differences within day ( $P < 0.05$ )

## CONCLUSION

- Steak location affects several traits, especially tenderness, when fabricated perpendicular to the grain.
- Steaks from Dorsal and Distal sections may be suitable for steak options, while the Medial section could be better utilized as roast option.