

Fresh Shelf Life Color Results for the MN Enhanced Beef Study

Materials and Methods

Steaks were placed in oxygen permeable bags and arranged in a retail display environment at 38°F upon receiving from J&B Group on day nine postmortem. Ground samples were not used in the shelf life test due to inconsistencies in sample collection. L*, a*, and b* color values were measured using the Minolta Chroma Meter (CR – 310) each day for 12 days at which point all steaks had an unacceptable amount of discoloration.

Results

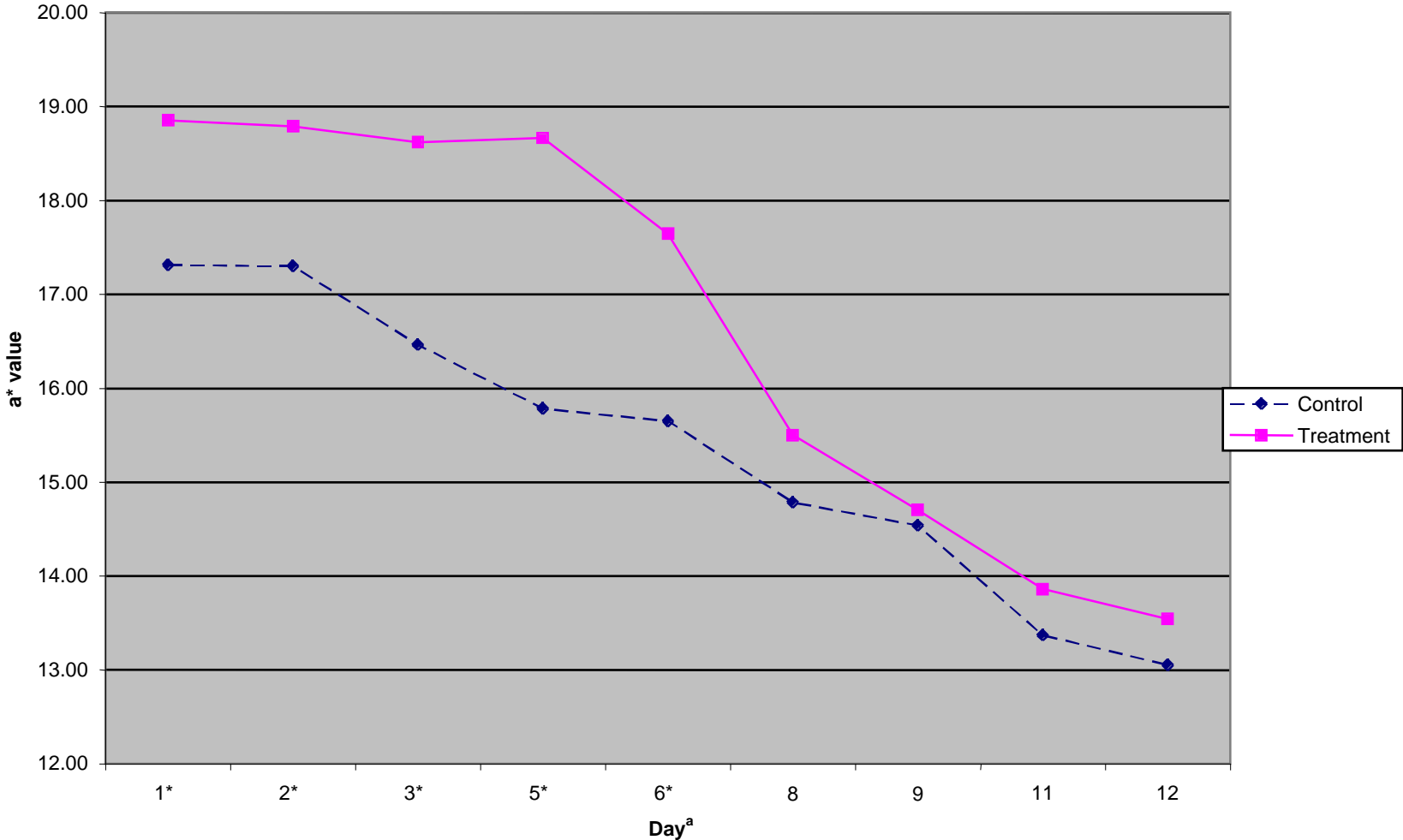
The purpose of the fresh shelf life evaluation was to determine whether the Rinse and Chill™ technology (**R&C**) would affect lean color stability in a retail display case environment. Minolta a* value is a measure of redness to greenness; therefore, a* is a good indicator of the amount of discoloration in meat. There were significant differences between control and treatment cuts for the *Serratus ventralis* (**SV**), *Triceps brachii* (**TB**), and *Obliquus abdominis internus* (**OAI or flap**). The SV (chuck roll) was more red ($P < 0.05$) for treated steaks vs. control steaks for days 1 through 6 and treated SV steaks continued a trend to more red than control SV steaks through day 12 (Figure 1). The TB (shoulder clod) a* values were significantly higher (more red, less discoloration) for treated steaks than control steaks for days 1 through 12 (Figure 2). Treated OAI (flap) a* values were significantly higher for treated steaks than for control steaks from day 3 through 12 with the exception of day 6 which may have been caused by a calibration problem (Figure 3). Figure 4 showed a* values for semitendinosus (**ST**) (eye of round) steaks had no significant differences between treated and control samples.

Another interesting point of information is the significant difference between SV (chuck roll) L* values (lightness to darkness) for R&C and control samples. The L* values were not significantly different for any of the other muscles sampled.

This data shows that there are differences between R&C and control samples in rate and amount of discoloration on whole muscle cuts in a retail case environment. Further research will need to be done to quantify these differences into actual days of extended shelf life and added value to wholesale and retail distributors.

***Serratus ventralis* (SV)**
a* readings (higher = red, lower = green)

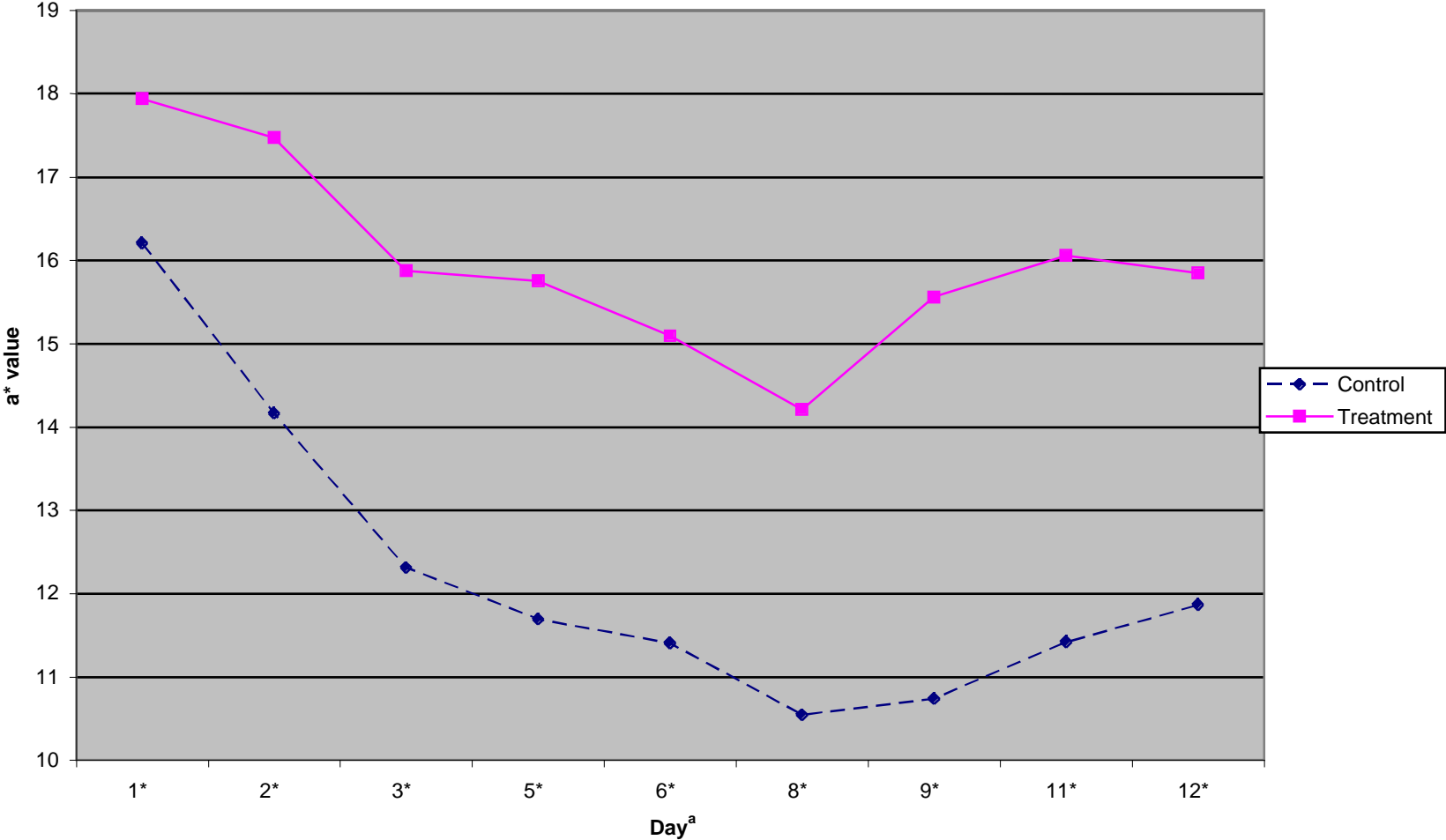
Figure 1



* Asterisk denotes statistical difference between control and treatment ($P > 0.05$)
^a38°F

Figure 2

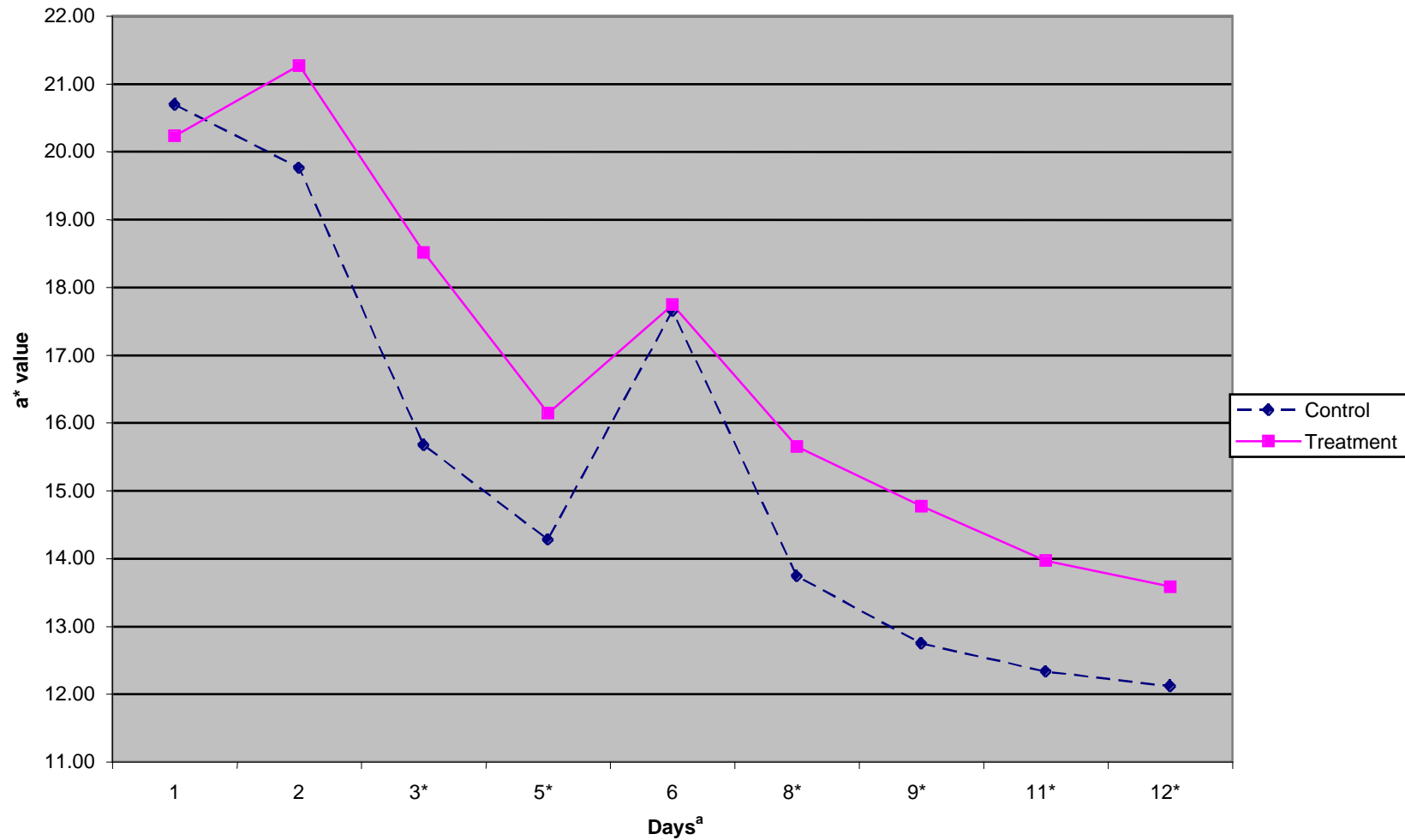
Triceps brachii (TB)
a* readings (higher = red, lower = green)



* Asterisk denotes statistical difference between control and treatment ($P > 0.05$)
^a38°F

***Obliquus abdominis internus* (Flap)**
a* readings (higher = red, lower = green)

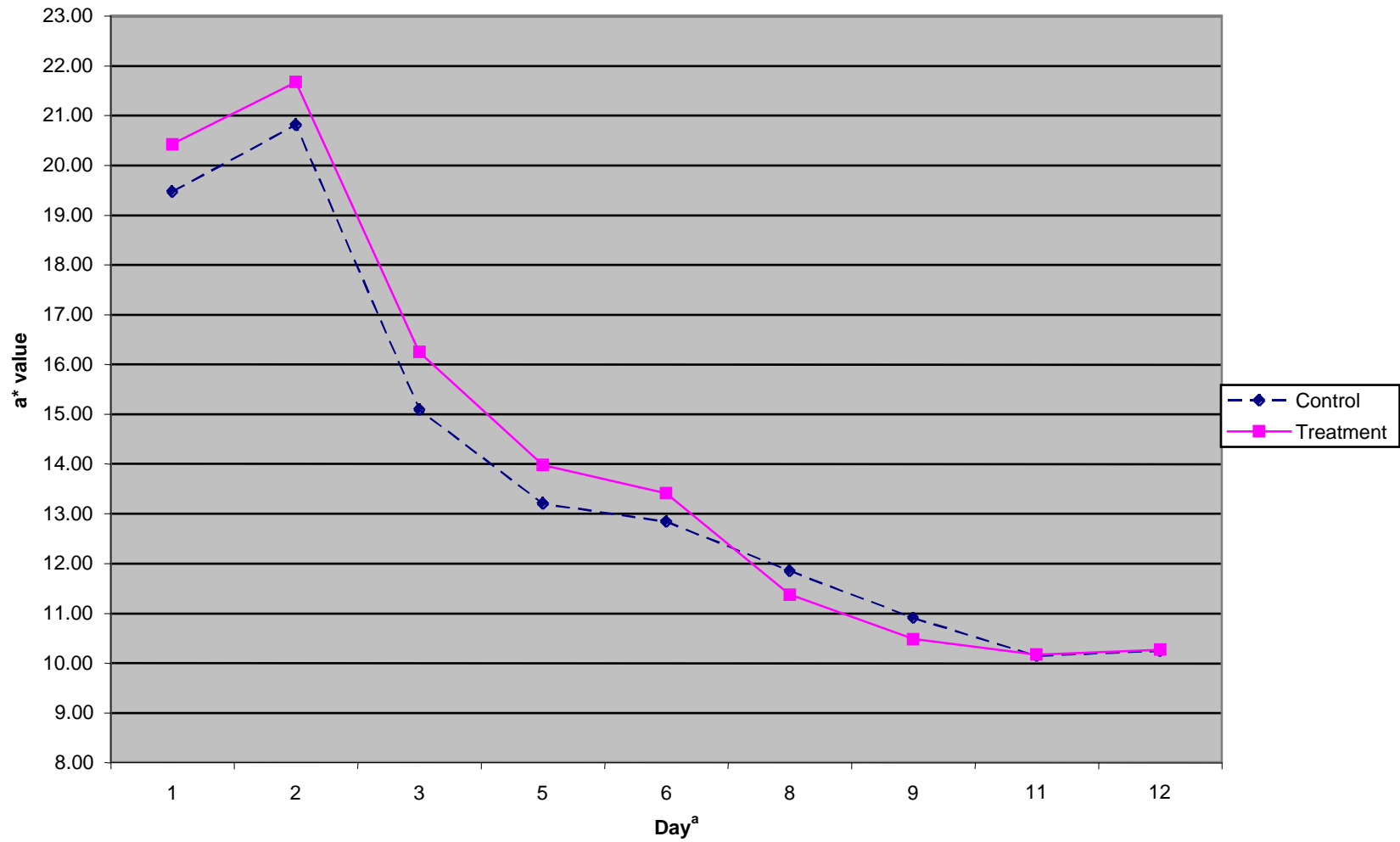
Figure 3



* Asterisk denotes statistical difference between control and treatment ($P > 0.05$)
^a38°F

Semitendinosus (ST)
a* readings (higher = red, lower = green)

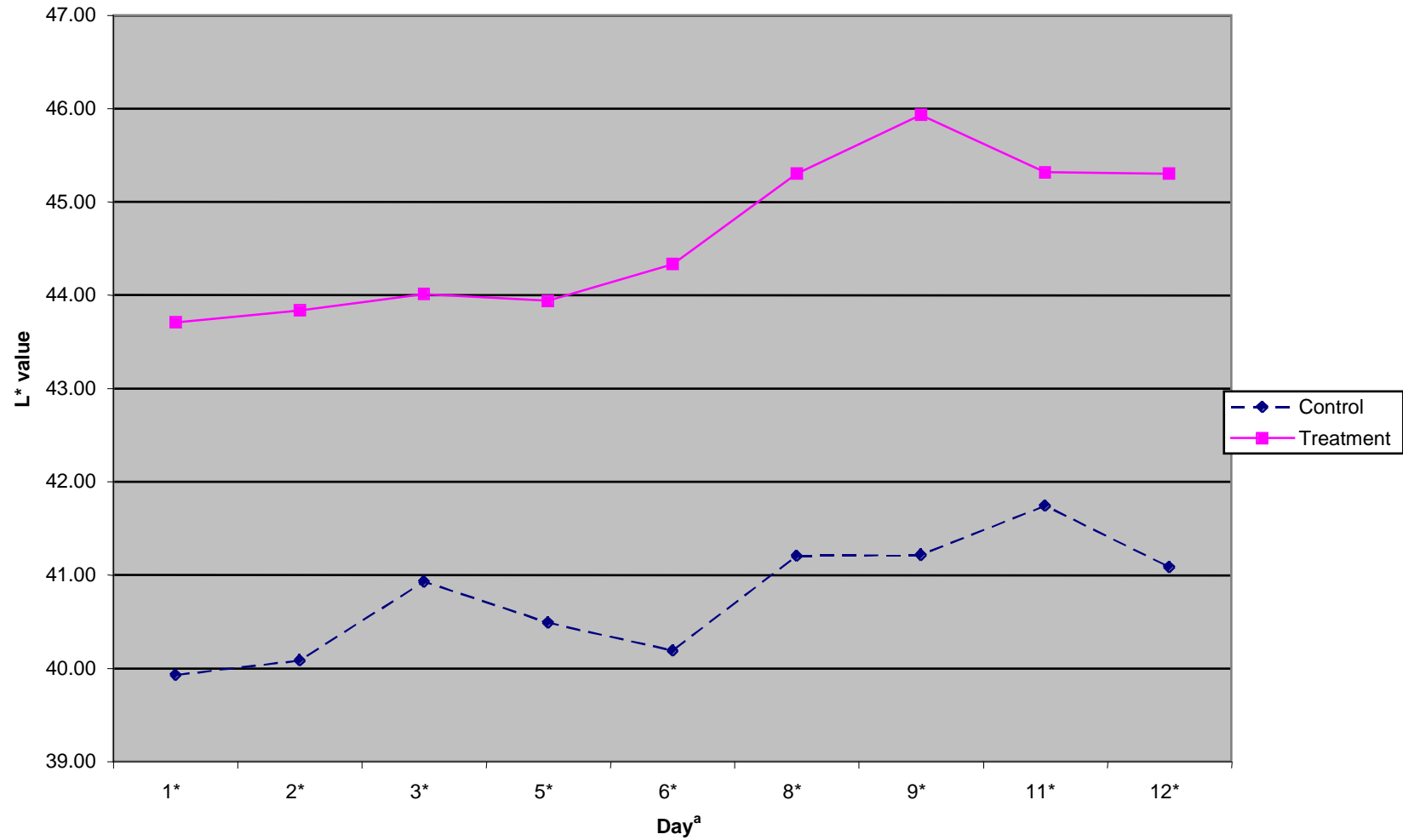
Figure 4



* Asterisk denotes statistical difference between control and treatment ($P > 0.05$)
^a38°F

***Serratus ventralis* (SV)**
L* readings (lightness: 100 = white, 0 = black)

Figure 5



* Asterisk denotes statistical difference between control and treatment ($P > 0.05$)
^a38°F