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# Effect of Diet on Bloom Time of Beef

K. Insausti[1]*, M. J. Colle[2], P. D. Bass[2], I. Goenaga[1], O. Urrutia[1], J. A. Mendizabal[1], M. J. Beriain[1], and B. Soret[1]

[1]ETSIA-IS FOOD, Public University of Navarra, Pamplona, Spain,
[2]CALS, University of Idaho, Moscow, ID, USA
*Corresponding author. Email: kizkitza.insausti@unavarra.es (K. Insausti)

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## Objectives

The objective of the study was to assess the evolution of the bloom color in beef aged for 8 d to establish the moment of measurement in which values of L*, a* and b* stabilize and are representative of the characteristic color of the meat from beef fed different diets.

## Materials and Methods

In the current study, eight young Pirenaica bulls were used. The bulls were born and reared on a private commercial Protected Denomination Origin (PDO)-approved farm located in the region of Navarra (Northern Spain). After weaning at approximately 4 mo of age, the calves were administered the same diet until month 12. The bulls were separated in two groups and each of group was fed a different energy level diet (High energy, H: 2914.2 kcal/kg vs. Low energy, L: 2548.4kcal/kg) until slaughter at 18 mo of age. Diet was based on barley (H: 26% vs. L: 22%), corn (H: 50% vs. L: 45%) and soja (H: 17% and L: 17%). The research was conducted under the highest standards of humane care and use of animals in accordance with European guidelines (EU). *Longissimus dorsi* muscle was removed after 24 h. post-mortem from the left side of the carcasses, pH was measured, and the meat was transported to the Meat Science Laboratory at the Public University of Navarra (Pamplona, Spain) under refrigeration. Steaks were aged in vacuum for 8 d post-mortem, which is the typical period for this type of meat under the PDO Ternera de Navarra. After aging, L*, a*, and b*were recorded every 3 min (5 repetitions per sample) for 102 min with a Minolta CM 2002 Spectrophotocolorimeter. Data were analyzed using the Linear General Model procedure with the IBM SPSS Statistics 24, and significance was determined at $P < 0.05$.

## Results

The pH values were 5.56 (H) and 5.50 (L) ($P < 0.05$) thus, no DFD meat was observed. Color differed depending on diet (L*H: 28.88 vs. L*L: 34.26, $P < 0.01$; a*H: 26.33 vs. a*L: 18.11, $P < 0.001$; b*H: 11.58 vs. b*L: 7.94, $P < 0.001$) even if the initial pigment content was not statistically different (H: 5.34 mg/g vs. L: 4.74 g/g; $P = 0.107$). In fact, beef from the H diet showed higher a* and b* values, and lower L* values than beef from the L diet ($P < 0.05$). Nonetheless, the time of stabilization for a practical color measurement did not differ between diets.

## Conclusion

In conclusion, despite the effect of diet on the initial beef color differences, the results of the current study showed that 15 min of meat exposure to oxygen is the minimum in either cases prior to taking measurements of color on beef aged 8 d.