THE EFFECT OF THE DRY AGING PROCESS ON THE BEEF COLOR

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Color is the most important quality trait of pre-purchase beef, serving as a quality and freshness indicator. This index determines the value of a carcass, depending on the pH value, the concentration and chemical, physical state of myoglobin and the attached ligand (O_2, CO, NO) and, to some extent, the structure of the meat. When light comes into contact with the surface of the meat, it can be reflected, absorbed or scattered. The combination of these three behaviors determines the meat color, but primarily the reflected light determines the consumer's perception and therefore acceptability. Also, the pH status of the meat is closely related to the scattering light amount, a lower meat pH being associated with increased light scattering. The change in color parameters are influenced by the post mortem biochemical and physico-chemical changes that occur in the meat, namely in the dry aging process. In this context, in the case of dry aging meat prepared to obtain beef steaks, with the increase in the aging time, there are changes in the color parameters, with an increase in pH and an improvement in texture properties.

The purpose of this paper is to analyze the impact of beef dry aging for 14, 21, 28 and 35 days on the color change through *L**, *a** and *b** values.

For analysis, Simmental beef was cut, sliced from the carcass: T-bons and Ribeye. Fresh meat and dried aged meat (14, 21, 28, 35 days) in the aging room with controlled parameters: temperature (1±1 °C), relative humidity (80±5 %) and of air circulation speed (0.5-2 m/s) were subjected to determinations.

Meat color parameters was performed with Konica Minolta Colorimeter.

The L* parameter showed average values between 37.38 and 41.91 units during the ripening period, the meat samples have a high brightness, increasing compared to fresh beef, chromatic attributes depending on the pH value of the meat, which slightly increased during dry aging. For the a* coordinate, the average values were between 19.31 and 13.55 units - decreasing values, possibly due to the reduction in the oxygenation capacity of the meat which depends on the availability of oxygen, the oxygen diffusion in the meat and the rate of oxygen consumption. This latter factor will be decreased at the end of the dry aging period when the inactivation of oxygen-using enzymes takes place, therefore, in fresh meat, oxygenation occurs faster because the increased penetration of oxygen creates a deeper layer of oxymyoglobin, thus providing a redder color more intense. In the case of the chromaticity coordinate b*, the average values were between 13.81 and 13.50, a slight decrease, all of which are located on the positive side of the axis, which represents the yellow zone. C* chroma values show decreasing values from 23.7 to 19.12, results that explain the decrease in beef color intensity during the aging period. The color differences between raw meat and dry aged meat was expressed by ΔE, which increases proportionally with the increase in dry aging period, from 1.05 to 7.33.

The dry aging process has a favorable impact on the meat color parameters. The samples showed uniformity in the three chromatic coordinates L*, a*, b* throughout the dry aging period. Beef dry aged during 28 and 35 days has dark red color, with a high brightness compared to fresh meat and a pronounced color difference that can be observed by the evaluator's eye.

Keywords: dry ageing process, beef, color, chromatic attributes

Acknowledgments: The research was funded by State Project no. 20.80009.5107.09 “Improving of food quality and safety through biotechnology and food engineering”, running at Technical University of Moldova.