REDUCING MOISTURE OF VACUUM AGED BEEF USING MEAT PADS

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I. OBJECTIVES

Aging is an important process to improve tenderness. Dry aging has been getting attention, mainly due to its improvement in flavor. This improvement may be associated with water loss and possible concentration of flavor compounds. However, in addition to moisture loss, there is formation of a dry surface, which must be removed, reducing the yield of this process. Vacuum aging has a higher yield; however, it does not guarantee the characteristic of flavor concentration from dry-aged meat. The aim of this work was to investigate how the use of moisture absorbers (meat pads) could act on the water loss dynamics of vacuum-packed meat.

II. MATERIALS AND METHODS

A total of 6 pieces of strip loin (*Longissimus lumborum*) was used for this experiment. Each piece was divided in half, with one portion destined for the control treatment (traditional vacuum) and the other half destined for the treatment using moisture absorbers (meat pads), also vacuum-packed. For the latter, the loins were completely wrapped with absorbers (MG175S; McAirlaid's, Germany) before vacuum packaging. Before aging, a steak of each piece was used to determine meat quality characteristics. Before vacuum packaging, the loins portions were weighed to estimate purge loss. Aging was carried out at 2°C ± 1°C for 33 d. After aging, the packages were opened, and the loins were weighed. Samples from the superficial region of aged meat, ~3 mm thick, were first collected to characterize the meat surface. Then the loins were cut into 2.54-cm-thick steaks for the analysis of the central region. Analysis of pH, water activity (a_w), and moisture of the superficial and central regions was performed. A steak from the central region was also used for color stability analysis during display storage for 12 d. The pH, a_w, and moisture data were analyzed as a 2 × 2 factorial analysis of variance (2 treatment and 2 positions) and the color data as repeated measures analysis of variance. The averages were tested by the Tukey test at the 5% level.

III. RESULTS

The fresh, not aged, samples showed a pH of 5.58 ± 0.17, water activity of 0.9940 ± 0.0016, and moisture of 75.39% ± 0.93%. The samples without meat pads had a lower ($P < 0.05$) water loss (2.26% ± 0.76%) compared to samples with meat pads (7.02% ± 1.97%). There was no significant interaction ($P > 0.05$) between treatments and positions for the variables pH, a_w, and moisture. The use of meat pads did not affect ($P > 0.05$) the pH (5.68 ± 0.20) and the water activity (0.9916 ± 0.0008). However, samples with meat pads (73.80% ± 1.04%) had lower ($P < 0.05$) moisture content than samples without meat pads (74.71% ± 0.77%). There was no effect of position on pH and a_w values ($P > 0.05$). A trend ($P = 0.09$) of lower moisture for the samples analyzed on the surface (73.99% ± 1.12%) was verified, in contrast with those analyzed in the central region (74.62% ± 0.87%). The color parameters L^* (40.49 ± 3.50), a^* (18.02 ± 0.57), and b^* (16.89 ± 3.04) were not affected by the use of meat pads ($P > 0.05$). The L^* coordinate was not affected by time ($P > 0.05$), while a^* and b^* coordinates decreased with the days of exposure ($P < 0.05$), mainly after day 8 of exposure.

IV. CONCLUSION

The results indicated that the use of meat pads/moisture absorbers in vacuum-packed meats can be a strategy for aging processes where the objective is to reduce the moisture of the product, without drastically affecting the surface of the meat, reducing the process losses. Otherwise, further studies on sensory analysis and maximization strategies for water loss are suggested for better results.

Keywords: aging, moisture absorbers, water loss