



Impact of Refrigerated Storage Time on the Instrumental Quality Traits and Dissipation of Woody Broiler Breast Meat

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Objectives

Since 2013, woody breast (WB) has been a prevalent meat quality defect in the broiler industry, affecting 30–40% of chicken breast meat from broilers with live weights greater than 4.2 kg. Woody breast results in a loss over \$200 million annually due to decreased yields and product value. WB samples are lighter, more yellow in appearance, and are characterized by a greater pH and cooking loss than normal breast meat. The objective of this research was to evaluate and compare the instrumental quality traits of normal and WB fillets over storage time to determine if the WB condition dissipates over storage time. Dissipation was defined by the change of severely woody to moderately woody breasts or the change of moderately woody to slightly woody or normal breasts.

Materials and Methods

Ninety chicken breast samples, 30 from each of the following breast meat categories (normal, moderately woody, and severely woody) were collected from a commercial processing plant on 5 separate occasions for evaluation of dissipation, purge loss and shear force from Day 1 (d1) through Day 5 (d5). A 3 × 6 factorial structure (WB severity × storage time) with 5 replications within a randomized complete block design (sampling occasions as blocks) with subsamples was utilized to evaluate the effects of WB severity (normal, moderate, severe) and storage time (d 0, d 1 to d 5) on

dissipation, purge loss and shear force (d 0 and d 5) (SAS version 9.4, Cary, NC).

Results

Results indicated that dissipation was observed on moderate and severe woody breast over storage time. After 5 d of storage at 2–4°C, 84% of SEV WB fillets dissipated to MOD WB, which was greater ($P < 0.05$) than all other storage times. In comparison, only 40–52% of the MOD WB fillets dissipated to slight WB or NOR breasts after 3–5 d of storage. Purge loss increased throughout storage time for NOR, MOD, and SEV chicken breast meat. In addition, purge loss was less ($P < 0.05$) for NOR than SEV WB after 1, 2, and 4 d of storage. However, after 5 d of storage, no difference ($P > 0.05$) existed in purge loss among NOR, MOD, and SEV WB meat. Shear force was greater ($P < 0.05$) for NOR than MOD and SEV WB meat on Day 0 in the upper, middle, and lower portions of the breast. By Day 1, there were no differences ($P > 0.05$) in shear force among the 3 breast meat severities. After 2, 3, 4, and 5 d of storage, the upper position (cranial part) of SEV WB fillets had greater ($P < 0.05$) shear force than NOR fillets.

Conclusion

In conclusion, the dissipation that occurred in WB meat over refrigerated storage was mainly visual and did not improve overall meat quality.