



Worthwhile Operational Guidelines & Suggestions

BROILER PROCESSING TIMELY INFORMATION – AUGUST 2008

Aging and meat tenderness

Meat tenderness is an important quality trait in premium, whole muscle chicken products (breast fillets). It is well recognized that meat deboned soon after death becomes unacceptably tough, and that extending the time between death and deboning (i.e., aging or maturing) reduces this response. Processing plants typically age intact whole carcasses/front-halves prior to deboning by holding them under refrigeration overnight or at least 4 hours after chilling. However, this type of aging program often alters product flow, reduces plant efficiency (additional space and energy cost), and lowers deboning productivity (yield losses due to moisture loss and meat loss). In order to achieve tenderness, muscle must first go through *rigor mortis*. Rigor (or stiffness) occurs when the energy source (ATP) in the muscle is depleted to a level where the contractile filaments within the muscle remain in an overlapped and “locked” position. Cutting the muscle prior to rigor mortis will cause it to contract and shorten, adding even more to this stiffness. Aging allows time for muscle to undergo a structural and biochemical degradation, leading to the resolution of bonds and overlapping formed by the contractile filaments. Postmortem electrical stimulation and marination are two methods frequently used by the processors to reduce meat toughness. Electrical stimulation during bleeding accelerates the depletion of muscle ATP, thereby initiates quicker and synchronized onset of *rigor mortis*. Marination, on the other hand, involves adding (injection, tumbling, etc.) fluid, phosphates and salts to hold the water in the muscle and to disrupt bonds among the contractile filaments.

The acceptable level of tenderness is often dictated by consumers and customers. Once a target level of tenderness is established, then the processors can decide on best method(s).



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