Effects of Postmortem Temperature and Time on the Water-Holding Capacity of Hot-Boned Turkey Breast and Thigh Muscle

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ABSTRACT

Turkey breast and thigh muscles were excised immediately after slaughter and held from 0.25 to 4 h postmortem at 0, 12 or 30°C to determine postmortem time and temperature effect on muscle pH, drip loss, sarcomere length, homogenate supernatant weight, salt-soluble protein and cooking yields.

Higher temperature and longer storage time induced greater drip losses in breast. Longer storage time induced greater drip loss but the least drip loss occurred at 12°C in thigh muscle. High temperature increased the supernatant weight in breast but decreased that in thigh. Storage time increased supernatant weight and supernatant salt-soluble protein levels in both muscles. Homogenate cooking yields of breast containing water, salt and phosphate (HWSP) were higher for 0 and 12°C compared with 30°C, and increased with storage. The low postmortem temperature (0°C) decreased homogenate cooking yields in thigh. These findings indicate that lower postmortem temperatures (0 and 12°C) and shorter storage time (24 h) produced the greatest water-holding capacity in turkey breast muscle, whereas high and low postmortem temperatures (30 and 0°C) and longer storage (168 h) produced the least water-holding capacity in raw turkey thigh muscle. Copyright © 1996 Elsevier Science Ltd

INTRODUCTION

To produce boneless products with desirable quality characteristics, conventional poultry processing uses cold-boning methods. However, hot boning has gained interest because of the potential savings in labor, space and energy requirements (Lyon & Hamm, 1986). Hot boning is the postmortem processing process in which muscle is removed from the carcass while it is close to body temperature. Hot boning has a significant effect on muscle toughness due to the resulting muscle shortening. Research emphasis has been placed on this characteristic, and various methods have been investigated to overcome toughness associated with hot boning (Hamm, 1983; Lyon & Hamm, 1986). Postmortem temperature and storage time are other factors that have a significant influence on muscle texture.

characteristics (Smith et al., 1969; Kim et al., 1986; Dutson & Carter, 1985). Although the effect of these factors has been investigated in relation to texture, less attention has been given to their effect on muscle water-holding capacity (WHC).

WHC of uncooked poultry is important because it influences raw muscle yield and sensory characteristics of the cooked product. Drip loss that occurs in fresh poultry could be water from the muscle cell or water that was picked up during water immersion chilling. If postmortem muscle drip loss is extensive, it may adversely influence sensory characteristics (Carpenter et al., 1979) in the same manner that drip loss from frozen and thawed muscle adversely influences sensory characteristics. A rapid muscle pH decline could be related to the denaturation of sarcoplasmic and myofibrillar proteins, increased contraction of actomyosin and the alteration of meat structure. However, Roseiro et al. (1994) reported that the use of pH 60 is a poor predictor of WHC and drip of pork at 24 h postmortem. The amount of drip loss that occurs in beef has been related to the extent of muscle shortening at various postmortem temperatures (Honikel et al., 1986). Northcutt et al. (1994) reported that meat from chicken exposed to high temperature (40 to 41°C) lost a significant amount of drip during processing. WHC is also a critical factor when water addition and cooking are employed in further processing steps. Processing yield and the influence WIJC has on sensory characteristics of further processed products are important considerations. Because further processing may occur several days after slaughter, the influence of storage time must be considered. With the growth in consumption of further processed poultry products (processing beyond cutup parts), there is a need to understand the effect that postmortem muscle temperature and storage time have on WHC when a hot-boning process is utilized. Lee and Rickansrud (1978) reported that both breast and thigh muscles of chicken subjected to 0–4°C environmental temperature showed no shortening. However, higher temperature (above 20°C) induced severe shortening in chicken muscles, especially in breast.

The objective of this study was to investigate the effect of postmortem temperature and storage time on the water-holding capacity of hot boned turkey breast and thigh muscles.

MATERIALS AND METHODS

Sample preparation

Live tom turkeys weighing 12.3 to 13.6 kg were obtained from a local producer, transported to the Iowa State University Meat Laboratory and held overnight. At the time of slaughter, the birds were placed in a restraining cone and stunned by using an electric knife attached to a stunner (Model FS-3671, Cervin Automated Systems Inc., Minneapolis, MN). Postmortem time started after a 3 min bleeding period. Immediately after bleeding, the birds were skinned, and the P. major breast and thigh muscles were removed. The P. major breast and tensor fasciae muscles from one side of each bird was sampled for drip loss. Muscle strips (6 strips per each muscle) approximately 100 mm long, 17 mm wide and 10 mm thick (15–20 g/strip) were removed from the skin side of the muscle. Muscle strips were randomly placed in a single layer into labeled Nasco Whirl-Pak bags and sealed after pressing air out of the bags. Duplicated bags were hooked and submerged in 0, 12 and 30°C water baths at 15 min postmortem. After 4 hours of incubation, the samples were transferred to a 2°C cooler. After muscle strips were removed for drip loss determination, the remaining breast and thigh muscles were cut into approximately 10 mm-thick slices (6 slices per muscle) starting at the anterior (neck) end of the muscle and progressing to the posterior (tail) end. The muscle strips (6 slices per muscle) were randomly distributed into three labeled bags.
(2 slices per bag in a single layer); bags were then placed in 0, 12 or 30°C water baths at
15 minutes postmortem. These samples were also used for monitoring pH. After 4 h of
incubation in water baths, bagged slices were transferred to a 2°C cooler. Six to eight h
postmortem, the slices in each bag were trimmed of fat and ground twice through a 3 mm
plate. Fluid exudate inside the bags from the muscle slices was mixed back into the ground
samples, which were then held in a 2°C cooler. The ground samples were used for WHC,
supernatant weight and salt-soluble protein determinations. Exudate was mixed back into
the ground sample prior to sampling.

Muscle pH

Triplicate pH readings were taken in random locations on each sample at 0.25, 0.50, 1, 3,
8, 24, 96 and 168 h postmortem. Readings were made by using a Corning (Medfield,
Massachusetts) model 125 pH meter and pencil tip style combination pH probe electrode
(Laboratory Research Products, Lincoln, Nebraska), which was inserted directly into the
muscle. Mean values were calculated for each postmortem temperature and time.

Drip loss

An initial muscle strip weight was determined. At 24, 96 and 168 h postmortem, the
muscle strip was blotted dry with a paper towel and then weighed to determine muscle
strip weight at that time postmortem. Percent drip loss was calculated by subtracting the
muscle strip weight from the initial weight, multiplying by 100 and then dividing by the
initial weight.

Sarcomere length

After drip-loss determinations, muscle strips were stored in a 2°C cooler for sarcomere
length measurement at 192 h postmortem for breast and 216 h for thigh. Approximately
0.2 g of muscle from random locations in the muscle strip were homogenized with 10 ml
of 0.05 M phosphate buffer (pH 7.1). Homogenization was performed in a 50-ml Nalgene
tube by using a Brinkmann homogenizer (model PT10/35, Brinkmann Instruments,
Westbury, New York) with a setting of 8 for 5 sec. Sarcomere length was measured by
using a phase-contrast microscope equipped with an eyepiece micrometer at a magnifica-
tion of 500×. A total of 16 measurements was made on each sample, and means were
calculated for each postmortem temperature. Statistical differences were not calculated for
sarcomere length values because of the relatively few measures made.

Water-holding capacity

Cooking losses were determined for two types of homogenate as a measure of water-
holding capacity (WHC) at 24, 96 and 168 h postmortem. The first homogenate (HW)
contained 24 g of ground muscle and 12 g of water (2°C). The second homogenate
(HWSP) contained 24 g of ground muscle and 12 g of a solution (2°C) of water, salt
(sodium chloride) and sodium tripolyphosphate (STPP). HWSP salt and STPP con-
centrations were 1.5% and 0.5% of the homogenate weight, respectively. Homogenates
were made by placing the meat and water or water, salt and STPP solution into a 180 ml
Nasco Whirl-Pak bag and then agitating the contents by using a Stomacher (Seward
Laboratory, London, England) type action for 40 cycles. Approximately 6 g of each
homogenate, in duplicate, was placed into preweighed 10-ml Kimax test tubes and
reweighed. The tubes were capped by using marbles and at 1 h after homogenization (held
at 2°C cooler), the tubes were placed in a 90°C water bath. After 20 min, the samples were removed and allowed to cool to room temperature (1 h). Free juice was drained, and the cooked meat piece was blotted by using a paper towel. The meat piece was placed back in the tube and reweighed. Percent cooking yield was determined by dividing the cooked meat weight by the raw homogenate weight and multiplying by 100. This procedure is similar to the method used by Honikel et al. (1981a).

**Supernatant weight and salt-soluble protein**

HWSP homogenates were made at 24, 96 and 168 h postmortem and were used to evaluate WHC. One hour after homogenization, 14 g of a solution (water, salt 1.5% and STPP 0.5% at 2°C) was added to 6 g of meat homogenate in a 50-ml Nalgene centrifuge tube in duplicate. The salt and STPP levels in the diluted homogenate were 1.5% and 0.5% respectively. The tube was capped and shaken vigorously by hand for 10 sec. The tubes were centrifuged at 20,000 g for 15 min at 5°C, after which the supernatant was decanted and weighed. A solution (water, salt 1.5% and STPP 0.5% at 2°C) equal to the weight of the pellet was added to the supernatant to adjust the supernatant protein concentration to a diluted homogenate basis.

To determine the amount of salt-soluble protein (SSP) in the adjusted supernatant, a sample was diluted with water to cause the SSP to precipitate. Five grams of adjusted supernatant was added to 25 ml of water (2°C) in a 50-ml Nalgene centrifuge tube and then centrifuged at 20,000 g for 15 min at 5°C. The supernatant was decanted, and the precipitated salt-soluble proteins contained in the pellet were resolubilized with 2.5 g of a water, salt (2%) and STPP (1%) solution (2°C). One half gram of the resolubilized protein solution was added to 0.5 ml of 1N NaOH and then vortexed. Protein concentration was determined by using the biuret method (Layne, 1957) and reported as milligrams of supernatant salt-soluble protein per gram of diluted homogenate. Bovine serum albumin was used for calibration.

**Statistical analysis**

Five birds were utilized in each of three replications. Drip losses, percent yield for HW and HWSP homogenates, supernatant weights and supernatant protein concentrations were analyzed using a randomized split-plot design. Least significant differences (LSD) were calculated when significant F-values ($p < 0.05$) were found. Breast portions from each bird which were exposed to one of the three postmortem temperatures were considered main plots and samples from these portions which were used at 24, 96 and 168 h postmortem were considered subplots. Analysis of variance and LSD were completed using SAS (SAS Institute Inc., 1985) procedures.

**RESULTS AND DISCUSSIONS**

The average 0.25 h postmortem pH values of breast (pH 6.27) and thigh (6.44) indicated that both muscles would have a normal rate of pH decline (Kijowski & Niewiarowicz, 1980; van Hoof & Dezeure-Wallays, 1980) and not be prone to DFD or PSE conditions. The rate of pH decline was high during the 1 h postmortem period for all temperatures, and samples stored at 0°C showing a sharper pH decline as observed by Lyon et al. (1985). Davey and Gilbert (1974) suggested the leakage of Ca$^{++}$ from the sarcoplasmic reticulum into the myofibrillar region at low temperature. The high calcium in the myofibrillar region triggers the breakdown of high energy phosphate (ATP) by muscle
contraction and speeds up the anaerobic glycolysis and pH drop. Accelerated *rigor mortis* was also reported in fish during storage at 0°C (Watabe et al., 1989). After 3 h post-mortem, the pH values of the muscles held at various postmortem temperatures were essentially the same (Fig. 1). Although temperature influenced the rate of pH decline, there was only a slight decline in pH from 3 to 24 h as reported by others (Stewart et al.,

![Graph A. Breast](image1)

![Graph B. Thigh](image2)

Fig. 1. Mean pH values of breast and thigh muscles at various postmortem temperatures (-o-, 0°C; ◆, 12°C; ■, 30°C) and times. Samples were held in a 2°C cooler after 4 h post-mortem; n = 15.
1984) and then it remained constant throughout 168 h postmortem. Thigh muscle contains much higher proportions of red fibers than breast muscle. The difference in sarcomere length of thigh muscle between 0 and 12°C is 0.33 μm and that of breast is 0.12 μm. This result indicated that thigh muscle containing red fibers was more susceptible to cold shortening than breast, but was not as severe as that reported in beef muscles (Marsh, 1977). Honikel et al. (1986) reported that cold contracture of a muscle increases drip loss and decreases water holding capacity of the muscle. The initial and ultimate pH values of leg muscle were about 0.2 units higher for thigh as compared with breast values.

The sarcomere lengths observed in this study (Table 1) were consistent with other reports at comparable temperatures, which showed increased shortening in poultry at 0°C (Smith et al., 1969; Papa & Fletcher, 1986; Dunn et al., 1995). Welbourn et al. (1968) reported that low chill temperature (0°C), compared with chilling at 16°C, caused a reduction in sarcomere lengths of 0.25 μm for breast and 0.15 μm for thigh. The sarcomere lengths of our bone-in and hot-boned turkey muscles at 0°C chill temperature indicated that hot-boning resulted in a reduction in sarcomere length of 0.1 μm for breast, and 0.35 μm for thigh. When low temperature chilling and hot-boning were combined, the total reduction in sarcomere length were 0.35 μm for breast muscle and about 0.5 μm for thigh. Papa et al. (1989) and Dunn et al. (1995) reported that reduced sarcomere lengths resulted in increased shear force in broiler breast muscle. Lee and Rickansrud (1978) observed a minimum shortening in the 4–10°C range and a severe shortening above 20°C for broiler breast and leg muscles. They concluded that there is no apparent cold shortening in chicken muscle except at 0°C. The relative shortening observed in thigh muscle in this study is similar to that reported in beef muscle, where intermediate shortening was found at 30°C compared with 0 and 12°C (Honikel et al., 1981b).

Drip loss in both breast and thigh muscles increased with time for all postmortem temperatures (Table 2). Drip loss of thigh muscle was less than that of breast for all temperatures and storage times. There were significant (p < 0.05) interactions between postmortem temperature and storage time in both breast and leg muscles. For turkey breast where minimum drip loss was found at 0 and 12°C, and the greatest drip losses occurred at 30°C. Thigh muscle at 30°C also experienced the greatest drip loss but 12°C was where the smallest drip loss occurred. Temperature effects on drip loss has been shown to correspond to sarcomere shortening (Honikel et al., 1986). Protein denaturation at 30°C may be a factor related to the drip loss observed (Bendall & Wismer-Pedersen, 1962; Penny, 1977; Tarrant & Mothersill, 1977) in turkey muscles. Northcutt et al. (1994) reported that meat from chicken exposed to high temperature (40 to 41°C) lost significant amounts of drip during the first 6 h postmortem.

### TABLE 1

<table>
<thead>
<tr>
<th>Water bath temperature (°C)</th>
<th>Breast</th>
<th>S.D.</th>
<th>Thigh</th>
<th>S.D.</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1.63</td>
<td>0.12</td>
<td>1.89</td>
<td>0.27</td>
</tr>
<tr>
<td>12</td>
<td>1.76</td>
<td>0.15</td>
<td>2.22</td>
<td>0.28</td>
</tr>
<tr>
<td>30</td>
<td>1.76</td>
<td>0.21</td>
<td>2.16</td>
<td>0.29</td>
</tr>
</tbody>
</table>

*Samples were measured at 192 h postmortem for breast and 216 h for thigh muscle; *n* = 15.

*Samples were held in a 2°C cooler after 4 h postmortem.*
Table 2
Mean drip loss (%) of breast and thigh muscles at various postmortem temperatures and storage times

<table>
<thead>
<tr>
<th>Time (hours)</th>
<th>0</th>
<th>12</th>
<th>30</th>
</tr>
</thead>
<tbody>
<tr>
<td>Breast muscle</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>24</td>
<td>0.95</td>
<td>1.11</td>
<td>3.26</td>
</tr>
<tr>
<td>96</td>
<td>2.15</td>
<td>2.36</td>
<td>5.18</td>
</tr>
<tr>
<td>168</td>
<td>3.33</td>
<td>3.45</td>
<td>6.62</td>
</tr>
<tr>
<td>Thigh muscle</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>24</td>
<td>0.63</td>
<td>0.69</td>
<td>1.55</td>
</tr>
<tr>
<td>96</td>
<td>1.76</td>
<td>1.31</td>
<td>2.83</td>
</tr>
<tr>
<td>168</td>
<td>2.81</td>
<td>1.99</td>
<td>3.65</td>
</tr>
</tbody>
</table>

Significant time by temperature interaction, \( p < 0.05 \); S.E. = 0.22 for breast and 0.19 for thigh; \( n = 15 \).

Samples were held in a 2°C cooler after 4 h postmortem.

The supernatant weight of breast and thigh muscles between the 0 and 12°C postmortem temperature were not different. However, breast muscle stored at 30°C had greater \( (p < 0.05) \) supernatant weight than those 0 and 12°C, indicating different characteristics of the two muscles on WHC at high postmortem temperature. The amount of SSP in breast and thigh muscles was increased with both postmortem temperature and during storage (Table 3). Proteolytic activity is likely to be the determining factor related to these results. Elevated early postmortem temperature should increase proteolytic activity, which causes greater disruption, and greater amounts of salt-soluble protein are extracted and are found in the supernatant fraction of the homogenate. Protein degradation and increases in protein solubility during postmortem

Table 3
Mean homogenate\(^a\) supernatant weight and salt soluble protein (SSP) of breast and thigh muscles at various postmortem temperatures and storage times

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Weight (g)</th>
<th>SSP (mg/g)</th>
<th>Weight (g)</th>
<th>SSP (mg/g)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water bath temperature (°C)(^b)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>15.11(^c)</td>
<td>2.63(^c)</td>
<td>15.97(^c)</td>
<td>1.75(^c)</td>
</tr>
<tr>
<td>12</td>
<td>15.15(^c)</td>
<td>2.75(^cd)</td>
<td>15.91(^c)</td>
<td>1.83(^cd)</td>
</tr>
<tr>
<td>30</td>
<td>15.42(^d)</td>
<td>2.90(^d)</td>
<td>15.81(^d)</td>
<td>2.06(^d)</td>
</tr>
<tr>
<td>S.E.</td>
<td>0.06</td>
<td>0.09</td>
<td>0.05</td>
<td>0.07</td>
</tr>
<tr>
<td>Time (h)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>24</td>
<td>14.97(^c)</td>
<td>2.46(^c)</td>
<td>15.68(^c)</td>
<td>1.78(^c)</td>
</tr>
<tr>
<td>96</td>
<td>15.28(^d)</td>
<td>2.78(^d)</td>
<td>15.92(^d)</td>
<td>1.92(^d)</td>
</tr>
<tr>
<td>168</td>
<td>15.42(^e)</td>
<td>3.30(^e)</td>
<td>16.08(^e)</td>
<td>1.94(^e)</td>
</tr>
<tr>
<td>S.E.</td>
<td>0.06</td>
<td>0.07</td>
<td>0.04</td>
<td>0.05</td>
</tr>
</tbody>
</table>

\(^a\)Homogenate HWSP contained water, salt and STPP.

\(^b\)Samples were held in a 2°C cooler after 4 h postmortem.

\(^c,d,e\)Means in each column with different superscripts are significantly different, \( p < 0.05 \); \( n = 45 \).
storage have also been reported by Kijowski (1984) in chicken. Reduced solubility of a particular protein or group of proteins due to denaturation at the 30°C postmortem temperature seems to be masked by an overall increase in total salt-soluble protein. The mean concentration of SSP was less in thigh (1.88 mg/g) compared with breast (2.76 mg/g), and the increase in SSP between 0 and 30°C temperatures was nearly the same for breast (0.27 mg/g) and thigh (0.31 mg/g). During storage from 24 to 168 h, the increase in SSP was less for thigh (0.16 mg/g) compared with breast (0.57 mg/g). This could be caused by the lower proteolytic activity in thigh than in breast at 2°C. A slower aging process and less proteolysis has been reported for poultry thigh compared with breast (Hay et al., 1973; Wyche & Goodwin, 1974).

Table 4 indicates that postmortem temperature or storage time did not have any effect on the cooking yield of breast homogenates prepared with water (HW) but had a significant effect on the cooking yield of breast muscle homogenate prepared with HWSP. The 30°C postmortem temperature of breast muscle reduced homogenate cooking yield compared with the 0 and 12°C. Reduced water retention capabilities for the breast slices in 30°C postmortem temperature were noted previously for drip loss and supernatant weight (Table 2 and Table 3). Changes in protein charge and extraction of protein by salt and phosphate alter the arrangement of proteins thereby increasing the water retained upon cooking (Offer & Trinick, 1983; Trout & Schmidt, 1983). Compared with the homogenate with water (HW), the addition of salt and STPP increased homogenate cooking yield by approximately 12.4%. The cooking yield of 168-h postmortem breast muscle homogenates prepared with HWSP was greatest at 30°C than at 0 and 12°C in this study. Hamm (1960) also reported similar results which were considered to be related to postmortem proteolytic processes.

In thigh homogenates, a lower cooking yield was found for both HW and at 0°C compared with 12 and 30°C whereas no differences were observed during storage time (Table 4). This finding differs from breast where HWSP cooking yield was lower at high temperature and HWSP cooking yield increased with time. The amount of SSP

### Table 4
Mean Homogenate<sup>a</sup> Cooking Yield (%) of Breast and Thigh Muscles at Various Postmortem Temperatures and Storage Times

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Breast muscle</th>
<th>Thigh muscle</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>HW</td>
<td>HWSP</td>
</tr>
<tr>
<td>Water bath temperature (°C)&lt;sup&gt;b&lt;/sup&gt;</td>
<td></td>
<td></td>
</tr>
<tr>
<td>00</td>
<td>63.7</td>
<td>76.4&lt;sup&gt;c&lt;/sup&gt;</td>
</tr>
<tr>
<td>12</td>
<td>63.1</td>
<td>76.7&lt;sup&gt;c&lt;/sup&gt;</td>
</tr>
<tr>
<td>30</td>
<td>62.9</td>
<td>74.0&lt;sup&gt;d&lt;/sup&gt;</td>
</tr>
<tr>
<td>S.E.</td>
<td>0.7</td>
<td>0.4</td>
</tr>
<tr>
<td>Time (h)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>24</td>
<td>63.7</td>
<td>75.4&lt;sup&gt;c&lt;/sup&gt;</td>
</tr>
<tr>
<td>96</td>
<td>62.4</td>
<td>75.3&lt;sup&gt;c&lt;/sup&gt;</td>
</tr>
<tr>
<td>168</td>
<td>62.9</td>
<td>76.3&lt;sup&gt;d&lt;/sup&gt;</td>
</tr>
<tr>
<td>S.E.</td>
<td>0.6</td>
<td>0.3</td>
</tr>
</tbody>
</table>

<sup>a</sup>Homogenate HW contained water and HWSP contained water, salt and STPP.

<sup>b</sup>Samples were held in a 2°C cooler after 4 h postmortem.

<sup>c,d</sup>Means in each column with different superscripts are significantly different, p < 0.05; n = 45.
and cooking yield indicate that increases in SSP did not correspond directly to greater cooking yield of muscles. This observation would be possible only when the proteins, which influence the cooking yield the most, were altered by protein denaturation. Although SSP increases significantly during storage, a significant increase in cooking yield might be observed only when Z-line and M-line structures are adequately degraded by proteolytic activities. Investigations into postmortem temperature and myofibril swelling characteristics for beef, indicated that sarcomere length did not have an influence on WHC. However, salt and phosphate levels and extraction time were influencing factors on the extraction of the A-band and swelling of the myofibril (Honikel et al., 1981; Offer & Trinick, 1983). On the basis of the salt and STPP levels used, the time required to obtain extraction and swelling may have been an influencing factor on HWSP cooking yields for thigh observed for 0°C in this study. Comparisons of thigh and breast cooking yield results show that breast yields are approximately 7.4% greater than thigh, and salt and STPP addition increases homogenate cooking yield approximately 12.3% from HW. Northcutt et al. (1994) also reported that chicken leg meat had lesser drip loss and greater WHC than breast, but cooked leg meat had a lower WHC.

It is concluded that in uncooked breast muscle, WHC based on drip loss is reduced by a postmortem temperature of 30°C. Cooking yield of breast muscle was decreased by high muscle temperature but increased during storage when salt and STPP were used. In addition, increased drip loss is observed in uncooked breast muscle during storage. Thigh muscle water-holding capacity characteristics were influenced by postmortem temperature and storage time. The temperature effects for thigh differed from those for breast. Storage time did not have as great an effect in thigh water-holding capacity as in breast.

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