SUMMARY

Key words: *refrigerated conditions, poultry meat, quality, storage.*

In the literature there are quite a few data on the influence of refrigeration technology and the way the packaging on the quality of poultry meat, but they have been limited to the assessment of a small number of indicators, particularly sensorial and physic-chemical and least microbiological.

Research plan was designed for three series of experiments:

Series I of experience "***Studies on the influence of technology on the quality of refrigerated poultry carcasses stored as***".

- Batch Lc-1: chicken carcass individually wrapped in polyethylene bags and stored at 3°C and relative humidity of 95%;
- Batch Lexp-1: chicken carcasses individually packaged in polyethylene bags and stored at 5°C and relative humidity of 85%;
- Batch Lexp-2: Individually packaged chicken carcass in polyethylene bags and stored at +6°C and relative humidity of 70%;

Were collected from each sample housing both the pectoral muscles, and the muscles thighs, which were conducted analyzes.

Second series of experiments, "***Studies on the influence of technology on the quality of refrigerated poultry meat stored as anatomical parts***":

- Batch Lc-2: breast, respectively, thighs packed in polyethylene bags and stored at 3°C and relative humidity of 95%;
- Batch Lexp-3: breast, respectively, thighs packed in polyethylene bags and stored at 5°C and relative humidity of 85%;
- Batch Lexp-4: chest and respectively thighs packed in polyethylene bags and stored at 6°C and relative humidity of 70%.

Series III experience: "***Studies on the influence of the method of packaging on the quality of poultry mea***t". Samples of three batches were stored under the same conditions (temperature = 3°C, relative humidity = 95%) only was packaged by different techniques, as follows:

- Batch Lc-3: breast respectively thighs packed in polyethylene bags;

- Batch Lexp-5: breast respectively thighs packed in polystyrene trays with Stretch film;
- Batch Lexp-6: breast respectively thighs in plastic trays with flexible shrink film with high oxygen barrier (BDF) in a modified atmosphere.

Series I of experience:

Regarding sensorial quality pectoral muscle, it was found that best preserved their product features fresh samples stored at 3°C and 95% RH (Lc-1) with the highest average score (9.9), followed by samples batch Lexp-1 with a score of 8.0; The lowest mean score (7.8) obtained samples stored at 6°C and 70% RH (Lexp-2).

Samples of thighs muscle from batch Lc-1 achieved the highest average score (9.8) sensorial examination, while those in batch Lexp-2 lowest score (7.8) between the two extremes batch samples were placed Lexp-1 (7.9 points), stored at 5°C and 85% RH.

Compared to the pH values of the fresh meat taken from the pectoral muscle, the record at the end of the 10 days storage are 17.56% was higher in the samples stored at 3°C and 95% RH (batch Lc-1), with 20.93% in the storage at 5°C and 85% RH (batch Lexp-1) and 22.62% for samples stored at +6°C and 70% RH (batch Lexp-2).

Regarding the samples of thigh muscle, pH values for the final (day 10 of storage) was 8.37% higher in the batch Lc-1, 13.87% in batch Lexp-1 with 15.08% in batch Lexp-2, compared to values determined on fresh meat.

Regarding the colorimetric characterization of meat studied during storage has been a trend of decreasing L* and a* and, respectively, increasing the parameter b*. Thus, the pectoral muscles, L* was reduced to 19.94% in batch Lexp-1, 17.91% in batch Lc-1 and 26.35% in batch Lexp-2 from the values obtained at the start of experience and a* less with 32.91% for batch Lc-1, 33.38% in batch Lexp-1 and 31.48% in batch Lexp-2.

At the end of the experience, the thigh muscles was defined by a decrease in both the colorimetric L* (lower by 8.18% in batch Lc-1, 9.97% in batch Lexp-1 and 10.75% in batch Lexp-2), as well as the a* (with 23.09% for batch Lexp-2, with 20.18% in batch Lexp-1 and 20.00% in batch Lc-1) to the values registered of the at the beginning of storage.

Referring to easily hydrolysable nitrogen content data obtained indicated an upward trend, directly proportional to the duration of storage. For pectoral muscles, with the highest content were registered in the batch Lexp-2, 19.96% higher compared to the batch Lc-1 and 11.53% from the batch Lexp-1 when the all thigh muscle, Lexp-2 batch were found the highest levels of easily hydrolysable nitrogen, 20.58% higher compared to the batch Lc-1 and 11.50% from the batch Lexp-1.

Regarding the content of biogenic amines of the two muscles studied, have shown that dosages putrescine and cadaverine in increased quantity during storage, while spermine and

spermidine or decreased more pronounced for two experimental batches (Lexp-1 and Lexp-2).

The amount of water in the pectoral muscles progressively reduced so that at the end of this experience was less than 1.83% in batch Lc-1, 1.82% in batch Lexp-1 and 1.83% in batch Lexp-2, to that found in samples of fresh proportionally increased amount of dry matter. In the case of the thighs muscles during the 10 days of storage there were reductions in the water content 1.88% to Lc-1 batch and 1.89% in the batches Lexp-1 and Lexp-2.

Dosage lipids and minerals showed no significant changes from one stage to another control, the protein level increased only slightly, as the concentration dry.

Establishing the total aerobic mesophilic germs revealed increases during storage, except that they were higher in batch Lexp-2, both for pectoral muscle (3.11% higher compared to batch Lexp-1 and 5.74% to Lc-1 batch), and thigh muscle (higher than 7.12% Lexp-1 and 24.65% to Lc-1).

For the number of bacteria *Pseudomonas* spp. pectoral muscles, the lowest values were recorded in the samples from the batch Lc-1, 13.30% lower compared to the batch Lexp-1 and 19.13% compared to the batch Lexp-2. The situation was true for thigh muscles, the smallest number of bacteria *Pseudomonas* spp. was recorded throughout the batch Lc-1, down 8.29% compared to the situation in batch Lexp-1 and 13.93% compared with the batch Lexp-2.

As bacteria of the genus *Enterobacter*, their number increased during storage, in direct correlation with the physical factors make. The most significant increase was registered in the batch Lexp-2 (storage at +6°C and 70% RH), the levels at the end of the experiment were higher by from 5.68 to 32.97% (as in the pectoral muscles) and with 7.46 to 23.25% (at the thigh muscle) compared with the other 2 batches of experience.

In none of the cases analyzed were identified bacteria of the genus *Salmonella*.

Second series of experiments

For pectoral muscles, fresh product features have been maintained better in batch Lc-2 (storage at 3°C and 95% RH) with the highest average score (9.4 points), group followed by Lexp-3 (stored at 5°C and 85% RH) of 7.7 point score and lot Lexp-4 (storage at +6°C and 70% RH) with a score of only 7.3 points. If thigh muscles, the highest scoring average (9.1) sensorial analysis was Lc-2 batch and the lowest (7.2 points) in batch Lexp-4, between the two extremes ranged lot Lexp-3 - (7.6 point).

Meat pH increased storage of time, noting that the higher the pectoral muscles were identified in batch Lexp-4, up 7.66% compared to Lc-2 and 1.78% compared to batch Lexp-3. Regarding to the thigh muscles, the values obtained at the end of the experience pH was 13.78% higher in the bath Lc-2, with 17.04% in batch Lexp-3 and 19.00% for batch Lexp-4, towards the beginning of its.

During storage was observed that the values of the parameters L* and a* have had a

downward trend, while the parameter b* increased levels directly proportional to its length.

The high nitrogen content of easily hydrolysable pectoral muscle samples were recorded in batch Lexp-4 higher compared to batch Lc-1 18.48% 2 0.35%, compared to the batch Lexp-3, thigh muscle and in the case where they were 21.93% higher than the Lc-2 batch and only 6.22% to batch Lexp-3.

Determination of the Kreis reaction pectoral muscles showed that samples from batch Lc-2 maintained the freshness for 4 days compared to batches Lexp-3 and Lexp-4, where this state was maintained only in the first 3 days. Samples of thigh muscles were more affected by oxidation, losing the freshness them a day earlier.

On the content of biogenic amines of the two muscles studied, putrescine and cadaverine were found to have increased during storage, spermine and spermidine while decreased more pronounced in the two experimental batches (Lexp-3 and Lexp-4).

Experimental factors (temperature and humidity) only affected the water content of meat samples and thus on the dry matter, but no statistical significance between batches. As an example, the end of storage, the water content of the pectoral muscle was greater than that of the first day, with 1.82% to Lc-2, with 1.83% at Lexp-3 and 1.82% at the Lexp-4, and the thigh muscles 1.88% to Lc-2, with 1.89% Lexp-1and with 1.90% at Lexp-4.

Establishing the total aerobic mesophilic germs of pectoral muscles revealed increases during storage, especially if the batch Lexp-4, which were higher by 16.64% compared to the batch Lc-2 and 4.92% to Lexp-3, the thigh muscles, high levels for NTGMA were all in batch Lexp-4 with 14.79% higher compared to Lc-2 and 1.96% from Lexp-3.

The lowest number of bacteria *Pseudomonas* spp. identified in batch Lc-2 with 7.92% lower than Lexp-4 and 1.92% from Lexp-3 in the pectoral muscle, respectively, less than 6.10% to Lexp-4 and 3.04% to Lexp-3 in the muscle of the thigh.

Number of *Enterobacter* bacteria progressively increased in direct proportion to the duration of storage. Thus, the pectoral muscles, with the highest levels were recorded in the batch Lexp-4 higher compared with 8.91% by Lc-2, with 0.73 by Lexp-3, and the thigh muscles, with 18.63% to Lc-2, and with 2.56% to Lexp-3.

Bacteria of the genus *Salmonella* were not present in the three dilutions made.

Series III of experience

Sensorial examination showed that modified atmosphere packaging of meat (batch Lexp-6) maintained a good condition for longer freshness, so if the pectoral muscle (average score of 11.3 points for the entire period) and to that of the thigh (10.3 points).

Lowest score obtained samples packed in foil trays Stretch (batch Lexp-5), 8.0 points for

pectoral muscle and 7.8 points in the muscles of the thighs.

For pectoral muscles, pH values recorded at the end of 10 days of storage were higher by 15.17% in batch Lc-3 (packing in polyethylene bags) with 16.13% in batch Lexp-5 (packing trays Stretch foil polystyrene) and 11.01% in batch Lexp-6 (packed in plastic trays with film and modified atmosphere BDF) compared with levels determined on fresh meat.

Regarding the evidence of the thigh muscles, the pH was set to end experience higher by 11.0% in batch Lc-3, with 13.48% in batch Lexp-5 and 5.46% in batch Lexp-6 against specific levels of the fresh product.

Regarding the colorimetric characteristics pectoral muscle, it was found that the 10 days of storage led to a reduction in lightness meat (L*), with 5.65% in batch Lc-3, with 6.21% in batch Lexp-5 and with 4.64% in batch Lexp-6 from the values obtained after 24 hours of storage, a situation also applies to the parameter a*, whose final values were lower in the batch Lc-3 with 22.57%, 27.46% in batch Lexp-5 and 31.49% in batch Lexp-6. Instead, the parameter b* increased by the end of storage, being 9.65% higher in samples packaged in polyethylene bags (batch Lc-3), 10.77% in those packed in trays Stretch (batch Lexp-5) and 3.91% in the samples packaged in trays BDF (batch Lexp-6) to the primary results.

At the end, the experience (day 10 of storage) samples consisting of the thigh muscles were calorimetrically defined as follows: L* values were reduced by 7.28% in batch Lc-3, with 8.15% in batch Lexp-5 and 4.66% in batch Lexp-6 versus specific levels of fresh meat a* decreased by 21.41% from meat samples packed in polyethylene bags (batch Lc-3) 24.54% in the packed trays Stretch (batch Lexp-5) and 38.50% for the packed trays BDF (Lexp-6) increases the parameter b* value during storage, with 21.22% in batch Lc-3, with 21.68% in batch Lexp-5 and 20.43% in batch Lexp-6 from the values set at the beginning of storage.

Easily hydrolysable nitrogen content in meat samples taken from the two muscles followed an upward trend during storage directly proportional to its length. The most significant increases in muscle easily hydrolysable nitrogen pectoris were identified in samples packed in trays Stretch 4.03% higher compared to the batch Lc-3 (packed in polyethylene bags) and with 22.66% compared to batch Lexp-6 (controlled atmosphere packaging).

In case of the thigh muscles, the highest values for easily hydrolysable nitrogen was registered as all the trays for stretch packaging, 24.68% higher compared to batch Lc-3 and the 82 54% in batch Lexp-6.

Analysis of meat quality through the reaction of aldehydes, showed that thigh muscles were more susceptible to oxidation compared with pectoris due to the high content of polyunsaturated fatty acids, the phenomenon was evident even when packaging in a modified atmosphere, which gave the best results (breast has lost its freshness on the storage 8, the thighs on day -7).

With regard to the content of the biogenic amine two muscles studied, our research showed

that putrescine and cadaverine were increases during storage, more meaningful if the tray packaging Stretch (with 374.32% - 1096.56% (pectoral muscles), respectively, with 666.78% - 723.73% (thigh muscles) higher than baseline, spermine and spermidine while reduced quantitatively more evident still in packaging trays Stretch (final values were lower by 26, 72% - 46.34% (pectoral muscle) and in 61.94 to 53.52% (thigh muscles), compared to initial).

In this series of experiments have been observed changes in the chemical composition of the meat studied for the purpose of progressively reducing the proportion of water and a corresponding increase in the dry matter.

In the case of the pectoral muscle, the amount of water decreased during storage in accordance with the type of package used, being less than 0.82% in batch Lexp-5, 0.46% in batch Lc-3 only 0.12% in batch Lexp-6 compared with the values found in fresh meat. Dosage fats and minerals showed no significant changes from one stage to the next control, but protein content increased slightly by the end of the storage period.

Amount of water in the thigh muscles decreased by 0.54% in batch Lexp-5 (Stretch packing trays) with 0.50% in batch Lc-3 (packed in polyethylene bags) and only 0.19% in batch Lexp-6 (packing trays BDF), in conjunction with the quantitative increase in the dry. Dry components (proteins, lipids and minerals) followed a similar dynamic to the one shown in the pectoral muscles.

In pectoral muscles determining the total aerobic mesophilic bacteria showed increases in value during storage, with 125% in batch Lexp-5 (Stretch packing trays) with 112.70% in batch Lc-3 (packed in polyethylene bags) and 106.92% in batch Lexp-6 (packed in trays BDF) correlated with oxygen permeability of packaging used, most germs are aerobic type. Similarly, the total number of *bacteria Pseudomonas spp*. increased during storage, the final level being made higher in the batch Lexp-5 with 97.62%, with 66.52% for the batch Lc-3 and with only 37.25% at the batch Lexp-6, compared to those determined on the first day of storage.

On the total number of bacteria *Enterobacter*, the lowest values were found in samples packed in trays BDF lower by 51.19% compared to batch Lexp-5 and 27.39% compared to the batch Lc-3. And thigh muscles, the most significant increases in total aerobic mesophilic bacteria samples were packed in trays Stretch (batch Lexp-5) and the lowest in samples packed in controlled atmosphere (batch Lexp-6).

The lowest values for total bacteria *Pseudomonas* and *Enterobacter spp.*, or obtained for modified atmosphere packaging (Lexp-6), 19.05% lower compared to the batch Lc-3 and 57.76% compared to the batch Lexp-5, available layout and *Enterobacter* (lower with 52.48% compared to the batch Lexp-5 and with 33.06% on Lc-3).

Bacteria of the genus *Salmonella* were present in both muscles studied, regardless of the dilution used, which indicates their absence throughout the meat supply chain (farm growth - slaughterhouse - cutting + packaging).