

THE ASSESSMENT OF THE MICROBIAL CONTAMINATION OF CHILLED POULTRY MEAT FROM THE COMMERCIAL NETWORK

Carmen CREȚU*, Cristina HORHOGEA*, Cristina RÎMBU* Ionel BONDOC*

*Facultatea de Medicină Veterinară Iași, Aleea M. Sadoveanu nr.8

e-mail:carmenccretu@yahoo.es

Abstract

Consumption of poultry meat in recent years in Romania has increased quite a lot, and consumer buying criteria is mainly state of freshness thanks to a high level of knowledge regarding nutrition. Consumer food safety, mainly in terms of microbiological safety is an important component that will ultimately lead to prevention of health problems. Sometimes the consumer can not come in direct contact with food to see the state of freshness, a situation encountered and poultry, must therefore be guided by the shelf. Any incorrect handling of poultry meat along the cold chain can impact on considerable quality. The rapid decrease in temperature at cooling stage cold chain compliance and prevents accelerated growth of microorganisms. Freshness health assessment was done poorly correlating measurement of ammonia added with determining the microbial load or total aerobic mesophilic bacteria and total psychrophilic germs. Carcasses were evaluated 2 days after the first chilling, 4 days before the expiry of 1 day, 6 -7 days respectively. Microbial load consignments examined at two days included average values of 1.64 log / g for N.T.G.M.A. and an average value of 25 mg NH₃%. In groups examined 4 days N.T.G.M.A. values was 3.05 log / g and an average value of 29 mg NH₃%. For loads from 6 -7 days refrigerated average values N.T.G.M.A. They were 5, 96 log / g and the mean values of ammonia easily hydrolyzable to 32mg%. Determinations on poultrymeat reveal failure refrigeration temperature recommended by the manufacturer or there were interruptions to the cold chain for various periods of time which goes by the last day of expiry of validity it to lose its characteristic freshness.

Keywords: poultry, refrigerated, shelf life

Introduction

Consumers may have more information on the freshness of meat ways, one is using the senses to evaluate the organoleptic quality of meat. That view is easier for meat that is not packaged or packaged meat so through visual analysis, smell, the consumer can come directly into contact with such meat (1, 3).

When the meat is done visual evaluation of consumer guides and after shelf life. Freshness and overall quality of the meat they depend largely and distribution system, total quality meat is the result of all characteristics that make it acceptable to the consumer (2,3).

Material and methods

The research was conducted within the trading unit of poultry carcasses, and in two supermarkets in Iasi for a period of 10 months. The samples were processed in the Laboratory of Microbiology food from the Faculty of Veterinary Medicine.

Carcasses were evaluated 2 days after the first chilling, 4 days before the expiry of valabiliate, ie 6-7 days after the first refrigeration. Total skeleton was evaluated by 60 frames, respectively by 20 carcasses from each batch preformed.

Measurements were performed on these batches were added on the determination of ammonia and weak determining the total aerobic mesophilic germs, making a correlation between the two parameters determined and the changes that occur throughout the trading period (1, 4).

Determination of easily hydrolysable nitrogen, according to STAS 9065 / 7-74.

Easily hydrolysable nitrogen (ammonia) released in the form of ammonia with a weak base is distilled off by steam distillation of water and quenched in an acidic solution.

The nitrogen of the amine groups released by hydrolysis with a weak base and together with free ammonia is driven by water vapor distillation in an acidic solution, quantitatively and qualitatively known. The excess is determined by titration of the acid with an alkaline solution equivalent.

Following investigations it was established that intrereprins ammonia weak values

supplementing the poultry varies according to the harvesting site and analytical evidence. Poultry meat is considered fresh if it contains up to 25 mg% ammonia, relatively fresh values between 25 mg% - 35 mg% and altered over slim supplement of 35mg% ammonia.

To obtain the serial dilutions were respected SR EN ISO 6887-1.-1996.

To determine the total number of aerobic mesophilic bacteria was used classic method according to SR EN ISO 4833 – 2003.

The total number of aerobic mesophilic bacteria was determined for dilutions of 10^{-4} and 10^{-5} Agar PCA (plate count agar) by incorporating a 1 ml inoculum. For each dilution was carried out two plates. Expression total number of aerobic mesophilic bacteria was made in log cfu / cm².

The total number of aerobic mesophilic bacteria is an indicator of health that gives us data on the state of contamination of carcasses. The presence of microorganisms on the meat and under certain conditions can be dangerous to the consumer.

Psychrofile microorganisms determination was made mesophilic microorganisms while determining the difference between the two measurements is only thermostatic temperature. Psychrophilic microorganisms in foods are usually kept in cold saprophytic at 0 - 4⁰ C, therefore the temperature of the samples taken was made at a temperature of 20⁰C.

Results and discussions

Mishandling of poultry meat along the cold chain can have a significant negative impact on its overall quality. To ensure the maintenance of high quality meat so the meat and distributing consumer must store and handle poultry under the conditions indicated by the manufacturer (5, 6).

An important step that can have major consequences on the quality of poultry meat is rapidly falling temperatures and adherence to a refrigeration chain that prevents the accelerated growth of microorganisms and thus can extend the shelf life of meat.

Freshness poultrymeat is based on determining the total number of germs and chemical changes that occur simultaneously physical flesh, because perception alteration of organoleptic point of view can sometimes be subjective. These changes can produce a modified meat odor, which may be the smell of the non-aerated in a putrid smell and is thus negatively affected by the consumer acceptance of meat (2, 5).

There is a close relationship between the initial number of microorganisms that pollute meat and timing of alteration, such as the number is larger alteration occurs in a shorter time, being affected the shelf life of the product.

Table 1.
Minimum and maximum values of the parameters NH₃% and N.T.G.M.A / log cfu / cm² to poultry carcasses examined

Nr.crt.	Lot analyzed	mg NH ₃ %			N.T.G.M.A./ log ufc/ cm ²		
		Min.	Max.	Media	Min.	Max.	Media
1.	Lot 2 days after the first refrigeration	24 mg%	25 mg%	25 mg%	1,06 log ufc/cm ²	2,22 log ufc/cm ²	1,64 log ufc/cm ²
2.	Lot 4 days after the first refrigeration	25 mg%	33 mg%	29 mg%	2,68 log ufc/cm ²	3,33 log ufc/cm ²	3,05 log ufc/cm ²
3.	Lot 6-7 days after the first refrigeration	29 mg%	35 mg%	32 mg%	3,96 log ufc/cm ²	7,97 log ufc/cm ²	5,96 log ufc/cm ²

According to the data in Table 1 it was found that the average value of the group N.T.G.M.A from 2 days of refrigeration 1.64 log cfu / cm², and value added on weak ammonia is 25mg%. Plot 4 days after the first refrigerant introduced to the average value of 3.05 log cfu / cm² and the amount of ammonia of 29 mg%. Lot 6 -7 days from the first refrigeration presented average of 5.96 log cfu of N.T.G.M.A / cm² and ammonia values of 32 mg%.

Table 2

Percentage representation of the number of carcasses which had maximum and minimum values for the parameters NH₃% and N.T.G.M.A / log cfu / cm²

Nr.crt.	Lot analyzed	mg NH ₃ % și N.T.G.M.A/ log ufc/ cm ²			
		Min.		Max.	
		Nr.	%	Nr.	%
1.	Lot 2 days after the first refrigeration	17	85%	3	15%
2.	Lot 4 days after the first refrigeration	16	80%	4	20%
3.	Lot 6-7 days after the first refrigeration	15	75%	5	25%

It is noted from Table 2 that a percentage of 15% of poultry carcasses 2 days after cooling had the highest values, the carcasses of 4 days at refrigeration proportion increased to 20% and a day before the end of validity percentage was 25%.

Consumers today are an important means of information on the freshness of meat, one of them is by using the senses to evaluate the organoleptic quality. Freshness and overall quality of the meat depends largely on the distribution and marketing system, any wrong handling meat along the cold chain can have a significant impact on its overall quality.

Organoleptic have been identified in samples with maximum values of N.T.G.M.A following changes: the presence of mucus on the surface of the meat was performed using the sense of touch. The smell was putrid slightly modified this was achieved by using olfactory analyzer to analyze the surface of the meat. Color: This was done by using visual analyzer - to notice skin discoloration and meat, so there were areas with a slightly gray color gray. Muscle elasticity was achieved using compression with fingers exerted on the meat surface. Returns to track whether or not compressed area of compression.

Conclusion

1. Determinations on poultrymeat reveal failure refrigeration temperature recommended by the manufacturer or were even cold chain disruptions over various periods of time, leading to the last day of life for poultry losing this feature freshness.

2. There are some important links that may influence the conservation status of poultry meat freshness throughout the period of validity: producer and marketer of transportation, cold storage room of the store, store refrigerated showcases marketing and not least how stores consumer meat.

3. Because perception alteration is regarded as subjective on early signs of alteration have

proposed that outside measurements to correlate with microbiological physico-chemical indicators or weak nitrogen added on. It is a useful indicator of quality for fresh poultry meat reflecting raw material quality and the hygiene of the process.

References

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