

DETERMINATION OF COOKING WEIGHT LOSS IN DIFFERENT TYPES OF BROILERS AND FREEZING PERIODS

Aline Giampietro-Ganeco¹, Hirasilva Borba², Juliana L. M. Mello¹, Luiz C. M. Junior³, Ana Beatriz B. Rodrigues¹, Caroline Demarchi³ and Leonardo D. do C. Vieira¹

¹Post-graduation students at São Paulo State University – UNESP, Jaboticabal, São Paulo, Brazil

²Professor of Technology Department at São Paulo State University – UNESP, Jaboticabal, São Paulo, Brazil

³Graduation students at São Paulo State University – UNESP, Jaboticabal, São Paulo, Brazil

*algiamp@yahoo.com.br

Abstract – The aim of this study was to evaluate cooking weight loss of broilers breast meat from the different types of creation systems and different times storage under freezing. Were analyzed the cooking weight loss in fresh breast meat (*Pectoralis major* muscle) and after three and six months under freezing. The statistical analysis a completely randomized design in 4x3 factorial was used with four creation systems (Colonial, conventional, antibiotic-free and organic systems) and three freezing periods (0, 3 and 6 months), in forty replications. There was statistical difference between creation systems and freezing periods to analysis that evaluates to cooking weight loss. Those meats were stored for 6 months under freezing showed higher values for weight loss in cooking, The process of freezing food can physically affect the meat. This study conclude different creation systems and storage under freezing influences the cooking weight loss of breast meat from broilers.

I. INTRODUCTION

Currently, the production of broilers adopts important criteria of productivity, such as carcass yield, breast meat yield and legs and carcass quality and meat. The degree of importance of these features varies according to the company, the type of product sold and the market to which it is intended. Improvement technological meat quality has become an important issue for the poultry industry, since it must offer products well suited to processing and responding to consumer demand. The genetic and the relationship between attributes of meat and other features of interest in broilers features can support an accurate and appropriate strategy to market the property.

Consumers are shown to be choosy about the quality of food, they are also more concerned about the impact of agricultural production on the environment and social well-being of the population. In this way, alternative systems of production of broilers, as the rustic, natural and organic seeking to meet a portion of consumers

who prioritize the consumption of healthier products considered were developed.

To meet the demands of the markets the quality of broiler meat depends on factors such as cooling rate and temperature. The demand of this product depends on the quality perception of the consumer customer. Are considered as objective criteria for its good acceptance items: appearance, water retention capacity, juiciness, tenderness, skin color, flesh color and cooking weight loss [1].

The aim of this study was to evaluate cooking weight loss of broilers breast meat from the different types of creation systems and different times storage under freezing.

II. MATERIALS AND METHODS

Carcasses from 120 broilers of colonial, 120 broilers of conventional, 120 broilers of antibiotic-free, and 120 broilers of organic creation systems, purchased from a commercial slaughterhouse were used in this study.

The poultry must have access to paddocks and they should have at least three square meters available for each bird housed. The minimum age is 85 days, the use of specific strains for this type of farming is needed.

It is the system used on poultry farms for commercial exploitation, with genetically selected for high growth rate lines and excellent feed efficiency, anticoccidial, growth promoters, chemotherapy and ingredients of animal origin and the birds are slaughtered at an average of 42 days.

The antibiotic-free broilers are raised in a system without the use of antibiotics, anticoccidial, performance enhancers based antibiotic, chemotherapy and ingredients of animal origin in the diet. This production system has no restriction lines. Are raised in closed sheds and controlled environment and slaughtered at an average of 45 days.

The poultry are raised in an organic system presents the pasture area with low density and feed containing ingredients certified organic vegetables. Apart from the chemotherapeutic products should not be used in creating and slaughtered at an average of 45 days.

Forty carcasses of each creation system were considered refrigerated carcasses. The other 80 carcasses of each creation system were brought to the freezing tunnel (fast freezing), and stored for up to three (40) and six months (40) under freezing. The carcasses with three and six months were stored in plastic bags traditional under a storage freezing (-18 ° C).

Later, the carcasses were sent to Technology Laboratory of Animal Products in São Paulo State University – UNESP, Jaboticabal, São Paulo, Brazil, maintaining the cold chain, for meat cooking weight loss.

Were analyzed the cooking weight loss in fresh breast meat (*Pectoralis major* muscle) and after three and six months under freezing. The cooking weight loss was determined by cooking the samples in a water bath according to methodology described by Honikel [2].

For statistical analysis a completely randomized design in 4x3 factorial was used with four creation systems (Colonial, conventional, antibiotic-free and organic systems) and three freezing periods (0, 3 and 6 months), in forty replications. Data were submitted to analysis of variance using the GLM Procedure and means compared by Tukey test (5%) using the statistical program SAS [2].

III. RESULTS AND DISCUSSION

Table 1 shows the average results obtained from cooking weight loss analysis in breast meat from broilers from colonial, conventional, antibiotic-free and organic creation systems. And there was difference to creation systems with the freezing periods and are shown in Table 2.

Table 1 Cooking weight loss of breast meat from different creation systems under freezing periods

Cooking Weight Loss (CWL)	
Creation Systems	
Colonial	27.49 C
Convencional	29.14 D
Antibiotic Free	25.91 B
Orgânico	30.54 A
P-value	<0.0001
Freezing periods	
Refrigerated	26.34 C
3 months frozen storage	28.23 B

6 months frozen storage	30.44 A
P-value	<0.0001
P-value	0.0002
CV(%)	6.35

Averages followed by different letters differ according to Tukey's test. The following abbreviations are used: CV: Coefficient of variation

There was statistical difference between creation systems and freezing periods to analysis that evaluates to cooking weight loss. Those meats were stored for 6 months under freezing showed higher values for weight loss in cooking. The process of freezing food can physically affect the meat. The freezing is carried out through rapid process, which avoids the formation of large crystal ice in the meat. The formation of ice crystals causes the disruption of cellular structures by drilling, releasing the liquid in the cellular thawing and cooking meat process, visualized in this study.

Table 2 Breakdown of the interaction between creations systems and freezing periods for cooking weight loss

	Refrigerated	3 months frozen storage	6 months frozen storage
Antibiotic Free	23.06 Bb	25.08 Bb	29.88 Ba
Colonial	26.92 Aa	27.25 Ba	28.14 Ba
Conventional	27.08 Ab	30.21 Aa	30.32 Ba
Organic	28.30 Ac	30.40 Ab	33.41 Aa

For a given factor, means followed by different capital letters in the column and different lowercase letters in the row are differ according to Tukey's test.

The meat from the organic rearing system showed higher cooking weight loss during all months of storage. The cooking weight loss is an important quality measure as associated with this meat yields after preparation for consumption. The meats of colonial systems didn't differ with storage for 6 months in a freezing.

IV. CONCLUSION

The different creation systems and storage under freezing influences the cooking weight loss of breast meat from broilers.

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