

DIRECT SALTING OF FROZEN HAMS*

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SUMMARY

Usual processing of spanish (dry cured) hams includes a critical thawing step of frozen raw matter before salting. The objective of this study was to evaluate the practical possibility of salting without this critical thawing step. The study was done on an homogenous lot of 48 frozen raw hams, divided in 2 groups of 24 pieces. The hams in group 1 was thaw and the ones in group 2 were salted still frozen. Both groups were placed in salting vat (saturated salt solution) for a total period of 8 days. Three hams of each group were analized for salt content in the deep of meat at each day of the processing period. The results showed that there were not significant differences in salt penetration among the two experimental groups. That indicates the real possibility of avoiding the thawing step on dry ham processing.

Introduction

Salting is a critical step in dry cured ham processing (Leon Crespo, 1990). The amount of salt that penetrates during this step has a significant influence on many aspects of further processing and, then, in the final quality of ham (Leon Crespo et al., 1992). The amount of salt that difusses inside the ham during the salting step depends on many factors including relative surface (weight and extension of removing of fat covering), initial meat quality (pH, amount of fat, fat infiltration) and, particularly, previous processing of raw matter, including electrical stimulation (Ockerman and Kwiatek, 1984) and freezing (Poma, 1989).

Using frozen hams for dry ham curing has become the most usual practice in industry as this raw matter is better from the economic point of view (cheaper costs all year around, longer preservation and better possibilities for production planning). The usual industrial practice includes a thawing step previous to salting and this step is a critical one, requiring a careful control of enviromental conditions to avoid spoilage. The simultaneous salting and thawing of meat is an experimental possibility (Sibalic et al., 1983) that required further technological applied study.

This study, part of a wider project, presents the experimental results of direct salting of frozen (unthaw) hams versus the comercial thaw hams counterpart.

Material and Methods

The study was done on 48 commercial frozen hams (kept at -18°C for 2 months) obtained from a local slaughterhouse. A group of 24 hams (group 1) was thaw before salting (kept for 48 h in a cold room at 3-5°C) and the other group of 24 hams were salted without previous thawing (group 2). For salting, all the hams were placed in a vat containing saturated salt solution in a cold room kept at 3-5°C. Experimental lots of 3 hams from each group were taken at random from the salting vat each day during the total experimental salting period of 8 days.

A cylindrical core of meat was obtained from the center (the widest part) of each ham and each core (mean 14 cms length) was divided in 7 samples (2 cms length each). Each sample was analyzed for salt content (Volhard method).

Analysis of data was done with the "Statgraphic Plus" software at the "Centro de Calculo de la Facultad de Veterinaria".

Results and Discussion

As shown in table 1, there was a significant effect of days of salting and depth in meat on salt content of samples. However, there was not a significant effect of grouping. That means that the amount of salt taken by both groups of hams, either frozen or thaw, when placed in the salting vat was similar.

In fact, as it can be seen in Figure 1, thaw hams took some more salt at the beginning of the salting process. This can be due to the fact that frozen hams maintained a lower temperature than the thaw ones during the three first days in the vat. Then both groups had the same temperature. The temperature influences the diffusion coefficient of salt about 3% by each °C (Zaitsev et al., 1969).

After 6 days of salting the distribution of salt in both groups is almost the same. Then, after 8 days of salting the amount of salt in the initially frozen group (of course thaw during salting) is even slightly over the thaw group. However, the differences in salt distribution among groups are not significant at any period of salting as can be seen in the model fitting results curves (table 2).

In conclusion, at the first sight from the presented results, that need further analysis, it is possible to think that the simultaneous salting and thawing of commercial hams can be a real possibility, avoiding the cumbersome thawing step.

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