

Shelf life extension of processed meat products using in-pack thermal shock decontamination

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INTRODUCTION

Processed meat products are usually cured, smoked, cooked and kept in buffer stores before being cut into smaller pieces and retail packed. Unfortunately, re-contamination will occur occasionally and shorten retail shelf life.

AIM

To develop an in-package thermal shock (TS) decontamination method to extend retail shelf life of processed vacuum-packed meat products.

MATERIALS & METHOD

Two meat products (1. Cured and smoked pork loin and 2. Danish pork flank roll) were processed in an industrial plant. The products were cut into 500 gram samples and vacuum-packed in boilable pouches.

At DTI, half were placed in an experimental treatment chamber and exposed to TS (130°C for 40 seconds) whereas the other half was left untreated as reference samples.

All samples were stored at 5°C for up to 154 days at DTI. Sampling (5 replicates) for total plate count (PCA, 20 days, 5°C) and sensory analysis were performed 9 times during storage.

RESULTS

- Thermal shock decreased the initial plate count by approx. 1 log cfu/g regardless of the product.
- Cured and smoked loin (reference) had 8.3 log cfu/g at day 99, whereas TS treated samples had only 1.4 log cfu/g. Sensory evaluations showed that the acceptance limit was reached after 55-70 days for the reference, whereas TS treated samples did not reach the limit at any time during the storage period of 126 days (Figure 1).
- For Danish pork flank roll, similar results were found with only 4.2 log cfu/g at day 126 for TS treated samples compared to 8.5 log cfu/g for the reference. Sensory acceptance limit was reached after 75 days whereas TS treated samples did not reach the limit at any time during the storage period of 154 days (Table 1).

CONCLUSION

- Thermal shock inactivates the psychrotrophic bacteria able to grow at 5°C.
- Thermal shock extends the shelf life of cured and smoked pork loin by more than 60-70 days.
- Thermal shock extends the shelf life of Danish pork flank roll by more than 80 days.

Thermal shock doubles shelf life of processed meat products

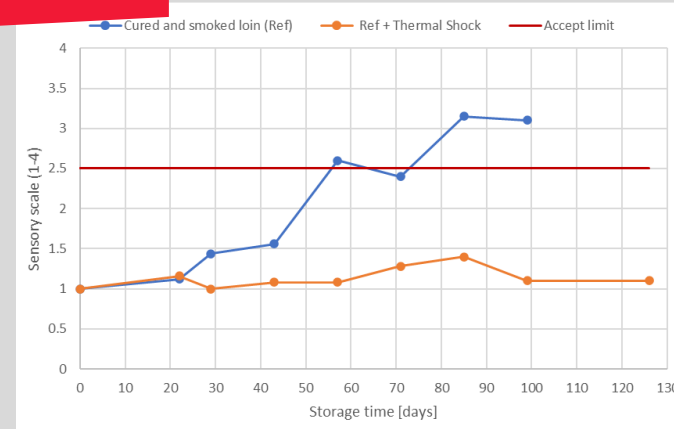


Figure 1. Sensory evaluation of cured and smoked pork loin (n=5)

Table 1. Shelf life of references and thermal shock treated meat products

	Reference	+ Thermal shock	Effect
Cured and smoked pork loin	55-70 days (day 55-85)	> 126 days	+ 55-70 days
Danish pork flank roll	75 days (day 71-85)	> 154 days	+ 80 days

Acknowledgement

The Danish Agency for Institutions and Educational Grants, under The Ministry of Higher Education and Science.