



# Recommendations for safe cooking of meat at temperatures below 75°C

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## INTRODUCTION

Application of sous vide cooking and cooking at temperatures below 75°C have increased during the last decade in the catering sector.

By cooking at temperatures below 75°C you gain the following benefits:



- Reduced cooking loss
- Increased juiciness
- A red centre

It is assumed that, in the worst case, fresh meat can contain 4 log of *L. monocytogenes*. Therefore a low temperature heat treatment that ensures a 4 log reduction of *L. monocytogenes* must be regarded as safe.

## OBJECTIVE

The objective was to convert the measured reductions of *L. monocytogenes* during heating at 58, 60 and 63°C to generic recommendations that ensure a 4 log reduction of *L. monocytogenes*.

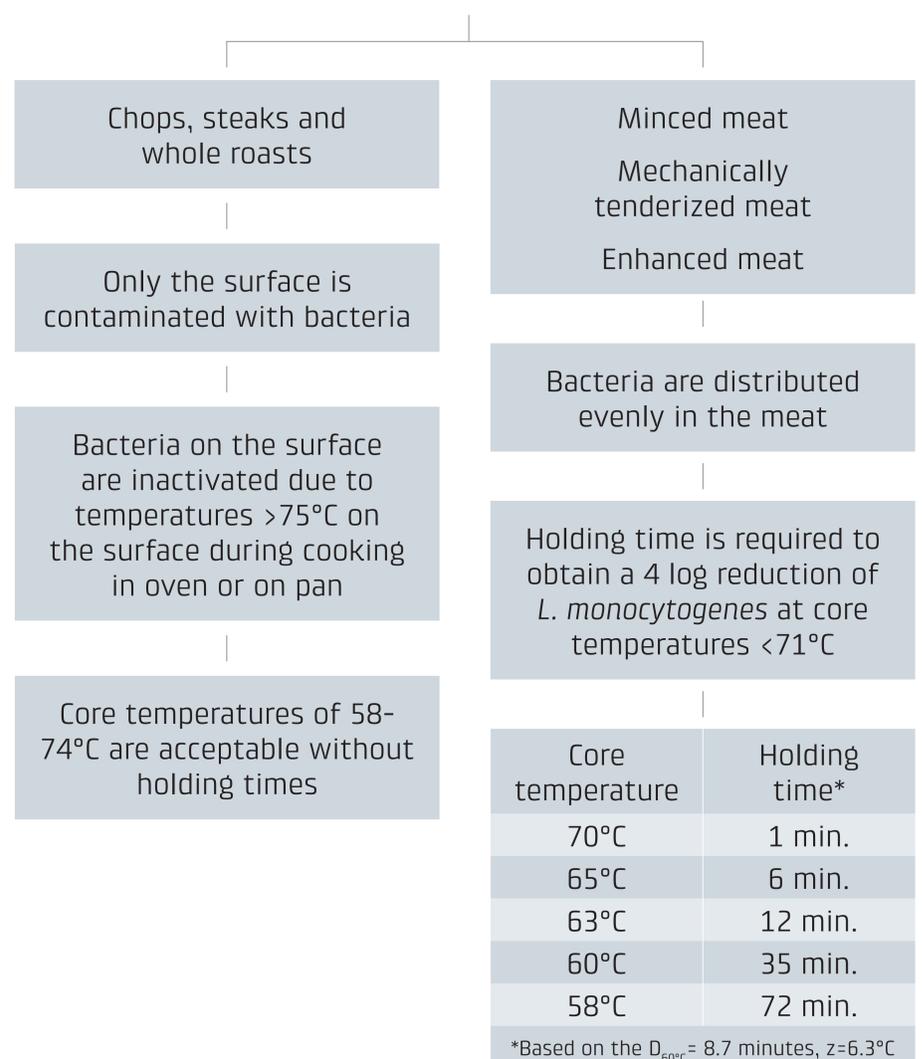
## MATERIALS AND METHODS

- Different meat cuts and patties were inoculated in the geometric centre with a green coloured 5-strain cocktail of *L. monocytogenes*
- The vacuum-packed samples were heat treated in water bath or industrial sous vide equipment at 58, 60 and 63°C
- Analysis of *L. monocytogenes* (Oxford, 48 h at 37°C) three to five times during the holding time

## RESULTS FROM EXPERIMENTS

- 🔧 At 58°C, the D-value was 2.5 times higher than the original mean D-value of the cocktail, indicating a heat adaptation of the *L. monocytogenes* strains
- 🔧 At 60°C, a 2 log reduction was obtained during heating to 60°C in the core, and more than a 6 log reduction was obtained after 20 minutes of holding time
- 🔧 At 63°C, more than a 4 log reduction was obtained during heating to 63°C in the core
- 🔧 The experimental results indicate that the generic results must include a safety margin, corresponding to a holding time at temperatures from 58-70°C

## COOKING OF MEAT TO CORE TEMPERATURES <75°C



**Figur 1.**

Generic recommendations for safe cooking of meat in sous vide, in oven or on pan at temperatures below 75°C

## CONCLUSION

An increase in D-value is measured at 58°C, probably corresponding to heat adaptation of *L. monocytogenes*

Generic recommendation for holding times must include a safety margin to take heat adaptation into account



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