

7 Summary

Examination of the effectiveness of different techniques to reduce contamination on hand-held units in meat processing

According to the German Regulation on Meat Inspection and Meat Hygiene (Fleischhygieneverordnung) a temperature of 82 °C or another appropriate measure is mandatory for cleaning and disinfection of the tools used in the course of meat processing.

Presently, the disinfection of knives using water of a temperature of 82 °C is widespread. However, frequently temperatures lower than this limit would be observed.

In practical performance of meat processing, the combination of time and temperature is the most limiting factor. It was the aim of this study to look for alternatives.

In a first step, in four abattoirs, the knives prior and after the disinfection were sampled and the aerobic plate count was examined. Simultaneously, taxonomical identification of the bacteriological colonization was performed. From the results of this field study, the quantitative and qualitative composition of the test suspension to be used for the experiments was derived.

In the end, the test surfaces were inoculated with

- *Staphylococcus aureus* (for grampositive cocci)
- *Enterobacter aerogenes* (for gramnegative rods)
- *Listeria monocytogenes* (for grampositive rods)

in an equal composition and with an amount of 10^3 bacteria per cm^2 .

Following treatments were tested:

- Different time/temperature combinations using pure water and of different time/temperature combinations
- Water with additional lactic acid in an end concentration of 2 %, and
- Water using ultrasonic and of different time/temperature combinations

Summary

- Water plus ultrasonic and additional lactic acid in an end concentration of 2 % and of different time/temperature combinations

The following combinations were capable to inactivate the test cultures, where the temperature is much lower compared to the mandatory 82 °C:

Tab. 7.1: Possible Alternatives to 82 °C Water Bath for Decontamination

Pure water	70 °C	10 sec
Water plus ultrasonic	60 °C	5 sec
Water with additional lactic acid	40 °C	10 sec
Water using ultrasonic with additional lactic acid	40 °C	5 sec