Anti-listerial biocontrol process developed for sliced meat products

Koch, Anette Granly; Jacobsen, Tomas; Knøchel, Susanne

Published in:
EUROCRAFT 2001

Publication date:
2001

Document version
Early version, also known as pre-print

EUROCAFT 2001

5-7 December 2001
Crowne Plaza Berlin City Centre, Berlin, Germany

European Conference on Advanced Technology for Safe and High Quality Foods

Join delegates and speakers from industry, government, universities, research institutes, EC, government and consumer organizations for a complete review of all the latest developments in:

- Process development: Basic considerations
- Advances in existing technologies
- New dimensions in food processing
- Food chain management
- Consumer aspects and legislative approaches

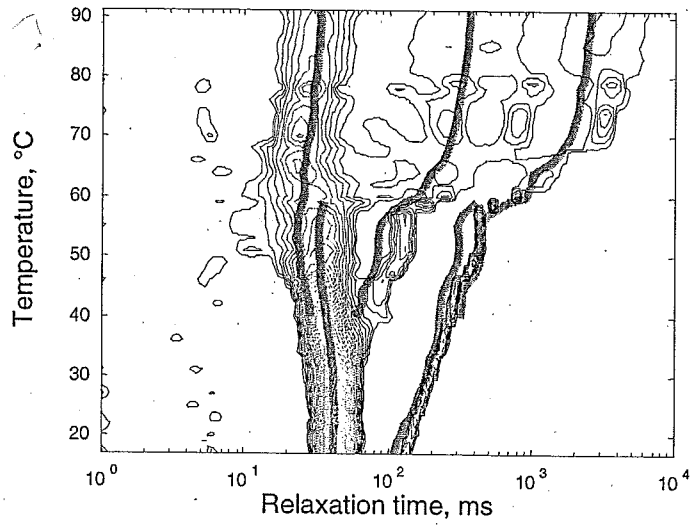
ORGANIZED BY — IN COOPERATION WITH ELSEVIER SCIENCE

The European Commission
Community Research,
Key Action I,
Food, Nutrition and Health

ELSEVIER SCIENCE

Figure 1

presence of two distinct initial water populations while a third population developed during the rise of the temperature from 44 to approximately 60 °C. The shortest T_2 component appeared to be temperature independent, while the two slower ones were strongly temperature dependent.



By using **Principal Component Analysis**, several transition temperatures were identified. Principal transitions are at 42 & 58 °C, as seen from the figure. Evaluation of the results by cross-validation proved that 3 principal components were sufficient to describe 99 % of the total variation.
The combined use of LF-NMR and multivariate data analysis proved to be able to identify major structural changes and liquid loss during cooking of meat.

1. Britton M.M.,Callaghan P.T. 1997. *J. Rheol.*, 41, 1365 – 1386.
2. Engelsen S.B., Jensen M.K., Pedersen H.T., Nørgaard L., Munck L. 2000. *J. Cereal Sci.*, 1 – 12.

2.56

Anti-listerial biocontrol process developed for sliced meat products

Koch, Anette Granly[1]; Jacobsen, Tomas[1*] and Knøchel, Susanne[2*].
[1]The Danish Meat Research Institute, Maglegaardsvej 2, DK-4000 Roskilde, Denmark
[2]The Royal Veterinary and Agricultural University, Rolighedsvej 30, DK-1958 Frederiksberg C, Denmark

Chemical preservatives can be used to stabilize ready-to-eat meat to avoid growth of *Listeria monocytogenes*. However the use of less sodium chloride and chemical preservatives makes new technologies necessary in order to maintain consumer safety. Biopreservation has been suggested as an alternative to chemical preservation. Bacteriocin producing strains of *Leuconostoc carnosum* are frequently isolated from commercially vacuum packed sliced meat products. The investigated strain had a listericidal effect and prevented growth of *L. monocytogenes* for 4 weeks at 5°C.

For upscaling from laboratory to industrial use, a new method for dispersing the protective culture had to be developed. An even spreading and a high number of the protective culture was vital for the biocontrolling effect in order to prevent growth of *L. monocytogenes* on all surfaces of the sliced product. An application method combining nozzles with the slicing machine gave a homogeneous distribution of *Leuc. carnosum*, thus preventing growth of *L. monocytogenes*.
Sensory evaluation showed that, in cases where changes were discernible, the product biopreserved with *Leuc. carnosum* had a slightly more acidic taste in the first part of storage, however at the end of shelf life, the biopreserved products were described as more fresh than the non-biopreserved controls. One problem in using biopreservation is selection for bacteriocin resistant *L. monocytogenes*. Almost 3% of approximately 400 *L. monocytogenes* strains were naturally resistant to the type of bacteriocin produced. However, our results showed that even a bacteriocin resistant variant of *L. monocytogenes* was markedly inhibited by the *L. carnosum* in a MA-packed pork saveloy stored at 5°C for 4 weeks.

Keyword: *Leuconostoc carnosum*, biopreservation, industrial application, antilisterial.

2.57

HOT-FILLING PASTEURISATION OF CUPUAÇU (*THEOBROMA GRANDIFLORUM*) PULP: PROCESS DESIGN AND IMPLEMENTATION UNDER AMAZONIAN CONDITIONS

Silva, F.M.; Quintas, M., Silva, C.L.M
Escola Superior de Biotecnologia, Universidade Católica Portuguesa, Porto, Portugal

Cupuaçu (*Theobroma grandiflorum*) is a fruit from the Amazonian region of Brazil, which contains a pulp with a pleasant aroma and flavour, and a great economic potential. The main objective of this work was to