

Brining and cooking meat products

Identification

Key words	Cooking, brine, meat, injection, pasteurization, jellification, restructuring, denaturalisation, cooked ham, bacon, cooked turkey
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Completed by	IRTA

How does it work?

Primary objective	Product stabilization
Working principle	<p>The brine is incorporated into the meat by injection or marination and then tumbled for protein extraction, less cooking loss, brine homogenization and meat softening. The product is placed into a mould and cooked, with hot water or steam, with or without smoking. Brine composition, quantity of brine injected, and cooking time and temperature combinations, give the desired final properties to the products: microbiological safety, colour stability, specific flavour, texture and shelf life.</p> <p>This process can be applied to different kind of meats. Brine quantity and procedure are specific for each product (f.e. bacon, ham, or chicken products).</p>
Images	
Additional effects	Microbiological reduction, flavour and colour modification, mass increase, density change
Important process parameters	cooking time and temperature, tumbling time, rotation, brine composition: salt, additives (preservatives, colorants, emulsifiers, stabilisers)
Important product parameters	meat pH

What can it be used for?

Products	cooked ham, bacon, cooked turkey
Operations	brining, cooking, pasteurization, moulding
Solutions for short comings	<p>The potential needs are:</p> <ul style="list-style-type: none"> • Increase the microbiology stability of meat • Increase the colour stability • Modify the texture and flavour of the raw product <p>The potential short comings are:</p> <ul style="list-style-type: none"> • Adequate temperature control and monitoring of the product • Cold storage is needed. • Sodium intake • Time and energy consuming process

What can it NOT be used for?

Products	Vegetarian products
Operations	Drying, fermentation
Other limitations	
Risks or hazards	Nitrite content, microbiological stability (C. Botulinum)

Implementation

Maturity	<p>This technology is widely described in the literature as this is a traditional process known for decades. Due to new technologies, new ingredients, introduction of artificial casings (improving microbiological stability and product stability) can be found.</p> <p>New developments in the pasteurisation process are being implemented. For example, the use of temperature probes online.</p>
Modularity /Implementation	Improvements in this technology are easily implemented in continuous productions lines.
Consumer aspects	<p>New product developments need the acceptance of new flavours and textures by the consumer.</p> <p>Traditionally produced products are widely accepted by consumers.</p>
Legal aspects	<ul style="list-style-type: none">• EC Regulation No. 2001/5/EC on food additives other than colours and sweeteners• EC Regulation No. 2073/2005 on Microbiological Criteria for Foodstuffs• EC Regulation No. 1924/2006 on nutrition and health claims made on foods
Environmental aspects	New technology developments are intended to reduce energy consumption during cooking process.

Facilities that might be interesting for you

Title	Institute/company
Auditorium IRTA	IRTA
Clean room - Histocell	Noray
Video observation system for market research and product development tasks - Keki	NAIK EKI

Further Information

Institutes	IRTA, SP, DMRI - Danish Technological Institute, UH, University of Copenhagen, SSICA
Companies	Campofrío, ElPozo, Casademont, Casa Tarradellas, Argal
References	<ol style="list-style-type: none">1. Advanced technologies for meat processing (2006). Co-edited by Leo M. L. Nollet & Fidel Toldrá. Boca Raton, CRC/Taylor & Francis.2. Research advances in the quality of meat and meat products (2002). Edited by Fidel Toldrá. Trivandrum, India, Research Signpost.3. Developments in meat science 4 (1988). Edited by Ralston Lawrie. London, Elsevier Applied Science.

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