Emerging and potential technologies for facilitating shrimp peeling: A review

Ready-to-eat shrimp processing is challenging due to the complex biological design with the shell tightly connected to the meat. Several techniques have been developed to weaken or loosen this connection, thus facilitating the subsequent peeling. The loosening process is typically undertaken by maturing the shrimps on ice or in brine, which requires several days, consequently risking loss in food quality and safety. To overcome those issues, developing novel technologies that not only assist the shell loosening but also retain the meat quality, safety and yield, is of paramount importance. This article reviews some essential characteristics of shrimp, the current methods of maturation, the use of the emerging technologies (high pressure, microwave, ultrasound, and enzyme) to facilitate the peeling of foods and clarify the potential of using them in shrimp shell removal. Industrial relevance During the production of peeled products, the shrimp processing industry has suffered from drawbacks of the traditional ice/brine maturations - a step facilitating the peeling. The drawbacks include yield loss, reduction of organoleptic quality, risk of microorganisms, time consuming issue and discontinuous process due to a long time soaking in maturing tanks. Therefore the need for seeking alternative methods to replace the traditional long maturations has grown, that address the future trends in sustainable processing of ready-to-eat shrimps. Emerging technologies e.g. high pressure, enzyme, ultrasound and microwave can potentially become the alternatives since they have strong peeling effects on lobsters, crabs, bivalve mollusks, eggshells, human skin, fruits and vegetables. Also these technologies offer benefits such as short process time, retained nutritional and sensorial characteristics, energy and water efficiency which all promise higher profits for the shrimp industry.

General information
Publication status: Published
Organisations: National Food Institute, Research group for Food Production Engineering, University of Copenhagen, Royal Greenland A/S
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Number of pages: 13
Pages: 228-240
Publication date: 2018
Peer-reviewed: Yes

Publication information
Journal: Innovative Food Science and Emerging Technologies
Volume: 45
ISSN (Print): 1466-8564
Ratings:
BFI (2018): BFI-level 1
Scopus rating (2018): CiteScore 4.4 SJR 1.43 SNIP 1.388
Web of Science (2018): Impact factor 4.085
Web of Science (2018): Indexed yes
Original language: English
Keywords: Food Science, Chemistry (all), Industrial and Manufacturing Engineering, Enzyme, High pressure, Microwave, Shell loosening technologies, Shrimp, Ultrasound, Enzymes, Food safety, High pressure effects, Microwaves, Molluscs, Safety engineering, Shells (structures), Ultrasonics, Discontinuous process, Essential characteristic, Food quality and safeties, Fruits and vegetables, Potential technologies, Sustainable processing, Shellfish, Structural Members and Shapes, Medicine, Biology, Marine Science and Oceanography, Electromagnetic Waves, Ultrasonic Waves, Safety Engineering
DOIs:
10.1016/j.ifset.2017.10.017
Source: FindIt
Source ID: 2392635988
Research output: Contribution to journal › Journal article – Annual report year: 2018 › Research › peer-review