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Non-thermal food processing: Recent advances and future prospects for food safety

There is increasing consumer demand for foods that are safe, nutritious, fresh-like and devoid of synthetic food preservatives. While properly applied thermal processes such as heat pasteurization, ultra-high temperature, and canning can ensure microbial safety of foods, those processes can destroy heat labile nutrients and negatively alter certain sensory characteristics. Several chemical food preservatives such as potassium sorbate, sodium benzoate, sulfites, nitrite and parabens have been traditionally used in foods to effectively control pathogenic and spoilage organisms; however, these preservatives are perceived by consumers as substances that are unsafe and likely to have long-term negative effects on human health. Such consumer perception decreases acceptance of traditionally-processed foods that will in turn negatively affect food product sales and future industry income. In response to changing consumer expectations of food products, and challenges posed by thermal and certain other traditional food processes, many food manufacturers are ardently exploring the application of non-thermal processing technologies for foods. The aim of this symposium is to highlight the pros and cons of currently used and emerging non-thermal food processing technologies with emphasis on recent advances in food safety applications including hurdle technology approaches. Information will be presented on technologies including, but not limited, to high pressure processing, pulsed electric fields and preservation with naturally derived antimicrobials. The impact of these novel technologies on selected quality characteristics of foods will also be discussed. The symposium will involve presentations that will be delivered by food science and technology professionals from academia and industry who are active researchers in the area of enhancing food safety and quality.

Biography

Dr. Daraba is Associate professor at University "Dunarea de Jos" of Galati, Romania and Research Associate at Iowa State University, USA. She holds a PhD and MSc from University "Dunarea de Jos" of Galati, Romania. Dr. Daraba was a Norman Bourlaug/USAID Fellow at University of Kentucky, USA, and a postdoctoral fellow at Aristotle University of Thessaloniki funded by the Greek Government. Her area of expertise is food safety and quality, and HACCP in food industry and food service units. She works extensively in reviewing for scientific journals and national interest projects (Meat Science journal-USA; Graduate Women in Science Fellowships-USA; Action "Cooperation 2011"- Ministry of Education, Lifelong Learning & Religious Affairs – Greece). Dr. Daraba organized several international workshops and webinars in the area of food safety and HACCP held in the USA, Romania, and Haiti. She was a food safety and HACCP trainer for Haitian food processors under USAID/FAVACA/PADF project. She authored and co-authored books and book chapters, research publications, and scientific presentations in the area of food safety and quality, foodborne pathogens control using non-thermal technologies and natural antimicrobials, and HACCP.

Aubrey F Mendonca is an Associate Professor and Food Safety Microbiologist at Iowa State University, USA, where he lectures to both graduate and undergraduate students and conducts food safety research. He teaches courses such as Food Microbiology, Foodborne Hazards, and Advanced Food Microbiology, and conducts research in Microbial Food Safety. Additionally, he provides food safety consultation and conducts training on practical food safety and microbiology for food processors nationally and internationally. His research focuses on control of foodborne pathogenic and spoilage microorganisms using non-thermal technologies such as high pressure processing, ultra violet radiation, and electron beam irradiation, alone or combined with natural antimicrobials. He has numerous published papers in peer-reviewed scientific journals and has written several book chapters on control of foodborne microorganisms. He has established collaborations with food manufacturing companies in regard to pathogenic challenge testing of foods to evaluate the antimicrobial efficacy of non-thermal food processes.

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