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The impact of non-thermal processes on food quality and safety

Despite the efforts made by the scientific community to reduce the prevalence of foodborne pathogens in food systems, it still remains to be a serious public health concern. Most of the foodborne illness outbreaks occur as a result of consumption of contaminated foods. Hence efforts are being made to minimize/eliminate this risk from the food supply chain. A plethora of physical and chemical intervention methods have been explored to inactivate foodborne pathogens in food products, but no-one-method was found to be 100% effective, particularly in fresh produce. One significant challenge of non-thermal processes is situations where microorganisms are entrap in fat matrix in foods. Thus, limit the penetrating energy intensity directed toward microbes in fat protective environment and likewise the hydrophobicity of the boundary condition that impedes the penetration capacity in situations where water based antimicrobial agents are used. Currently, "multiple-hurdle" intervention approaches such as non-thermal technologies (Pulse ultraviolet light (PUV), Ultra-sonication (US) and Antimicrobial agents (AA)) in effectively controlling microbial proliferation will be discussed. The discussion will highlight the basic principles of PUV, US and their interactive effects and mechanism of microbial inactivation in food products. Additionally, comparative analysis against conventional thermal process processing methods will be presented. The scientific information presented will be appealing to both scientific and industry audience as presentation will demonstrate the impact of non-thermal technology on food quality and safety.

Biography

Lamin S Kassama obtained his PhD from the Department of Bioresource Engineering, McGill University Montreal, Canada. He is currently an Assistant Professor Food Processing and Engineering at Alabama A&M University, Huntsville Alabama. His research focuses on the application of novel technologies to enhance food quality and safety, with emphasizes on food structure, thermo-physical and rheological properties, heat and mass transfer, packaging, emerging technologies (Pulsed Ultraviolet (UV), Ultrasound) application in food processing. Current he is a Co-PI on a USDA grant focusing on Evaluation of multiple-hurdle antimicrobial technologies on inactivation of *Escherichia coli* 026, 045, and 0104:H4 when compared to 0157:H7.

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