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Mohammed Farid

The University of Auckland, New Zealand

Innovation in food sterilization

Food sterilization is a well-established technology and maybe classified into (1) in-can sterilization and (2) ultra high temperature short-time sterilization (UHT). The first is batch while the second is a continuous process. Both techniques require exposing the food to a high temperature (121°C to 140°C), which destroy all types of microorganisms including spoilage microorganism such as spores. However, in-can sterilization destroys most vitamins and other nutrients while UHT is known to change the flavor of food products such as milk, making it unfavorable by many consumers. Demands of consumers for higher quality and fresh tasting products are growing rapidly, which requires development of new processing technologies. Recently, non-conventional sterilization technologies have gained significant attention, since they have the potential to provide products with a better quality, fresh-like taste, and may even require lower energy. This presentation outlines the possibilities of combining one of the well-known methods of non-thermal processing such as pulsed electric field (PEF), high pressure (HPP), UV, ultrasound, irradiation and cold plasma with heat treatment. The main objective of such combinations of treatments is to lower overall treatment temperature/ time in order to produce food products of high quality. We recently have shown that the combination of PEF with heat could lower sterilization temperature of milk and hence reducing thermal damage to the nutrient in it.

Biography

Mohammed Farid has completed his BE in Chemical Engineering from the University of Baghdad, Iraq (1971), ME in Chemical Engineering from University of Swansea, Wales (1975) and PhD in Chemical Reactor Engineering from the University of Swansea, Wales in the UK. He is a Fellow of the Institution of Chemical Engineers, London and an active member of a number of international institutions. He has published more than 360 papers in international journals and refereed international conferences, 6 patents, 5 books, and 11 chapters in books. He has received a number of international awards such as the Matsumae International Fellowship from Japan (1986), the Hisham Hijawi Award for Outstanding Scientific Achievement in Research in 1993, and the Marie Curie Fellowship, from European Union in 2010. He was invited as a keynote speaker to a large number of international conferences worldwide such as iFOOD2013 in Hannover. He has initiated and established the research in NZ in non-thermal processing of food, including high pressure processing, pulsed electric field and UV, more than 15 years ago. In 2015, he was awarded by the International Association of Engineering and Food (IAEF) the "Lifetime Achievement Award"

m.farid@auckland.ac.nz