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Microbial Transglutaminase in Dairy Processing: Technical Aspects and Challenges

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Microbial transglutaminase (mtgase) is an enzyme widely known to modify food proteins by forming both inter- and intra-molecular isopeptide bonds in and between proteins.mtgase has been used increasingly in the dairy industry to promote desire changes in the functional properties of various dairy-based systems.Various attempts have been carried out utilizing tgase to increase cheese yield, enhance the quality of low-fat dairy products and improve texture and consistency of processed cheese, fermented milks, ice cream and other dairy products, which are discussed in this work. Significant variations between commercial mtgase types were found in terms of gelation kinetics, viscosity, water-holding capacity and heat stability of dairy processing. The specificity of mtgase towards milk proteins, enzyme concentration and processing conditions are crucial factors that determine the levels of protein modification, and consequently the quality attributes of dairy products. Additionally, commercial mtgase type, efficiency of mtgase deactivation treatment and the bioavailability of cross-linked proteins are of key factors for industry and consumer preferences. Mtgase is recognized as a safe substance for human ingestion, and has been considered a generally recognized as safe (GRAS) substance since 1998. The frontiers of knowledge and technology in this work contribute substantially to make a foundation for the dairy industry not only to develop innovative products, but also optimize the processing conditions.

Biography:

Dr. Ehab Romeih graduated from Cairo University-Egypt with a BSc in Dairy Science & Technology and a PhD in Dairy Technology. Dr. Romeih accomplished Postgraduate Diploma in Food Quality and MSc in Dairy Science from Thessaloniki University-Greece. Dr. Romeih is currently an associate professor in Dairy Science Department-Cairo University and occupying two guest positions in international universities. His teaching responsibility includes dairy chemistry, cheese science and dairy processing. Dr. Romeih was awarded various European funds and research positions in number of European universities including Marie-Curie Individual Fellowship, Norwegian Research Council, University of Lorraine-France and Aarhus University-Denmark.