

The Past and the New Challenges for the Next 10 Years AKINSEHINDE TIMOTHY ADEKUNLE

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Abstract:

The stress response in food microbes has been the focus of more than 400 articles published in the last 10 years, and more than 20 RTs have targeted microbial resistance. A wide range of food bacteria, pathogens or not, have been described to possess many adaptive mechanisms and specific stress responses that are useful to guarantee and improve fitness under specific environments. An important bacterial stress response is related to cross-protection, which plays a significant role in minimally processed foods. In fact, sub-lethal stress can induce multiple stress responses posing major public health concerns since many bacterial pathogens can become resistant to new preservation technology or processing. Many injured pathogens either retain or exhibit enhanced virulence in foods, thus making their detection crucial to safeguard the food supply chain. In addition, a cell fraction of the stressed bacterial population can remain metabolically active; they enter a non-culturable physiological state and represent a challenge for traditional food microbiology analytical methods. Future research should focus on the implementation of new methodologies for analytical methods able to detect and enumerate viable—but not culturable—cells as well as their stress responses and adaptation.

Continuous monitoring of food contaminants and the identification of risk factors are crucial for assuring food safety. Many original research articles included in these RTs have addressed issues related to the genetic diversity, prevalence, resistance, and novel transmission vectors of pathogenic bacteria, but they have also reported new findings on bacterial pathogenesis, such as antimicrobial or desiccation resistance associated with diverse genotypes or the identification of virulence determinants produced and secreted by pathogenic bacteria. Among the future targets of food microbiology, it could be interesting to pursue new findings and studies on the expression of critical virulence factors, which allow for niche adaptation and successful colonization, such as the persistence in food processing facilities via growing predominantly as biofilms rather than in a planktonic mode. New biological and non-biological innovation technologies, new compounds and treatment strategies, and advances in DNA sequencing technologies, with the characterization of bacterial genomes, have emerged for the control of foodborne pathogens; this must also be pursued further in the near future...

Biography:

AKINSEHINDE TIMOTHY ADEKUNLE has completed his PhD at the age of 35 years from AMBROSE ALLI UNIVERSITY he is also the CMD/FOUNDER DTO5 TRADING CO LTD.. and a consultancy of food and nutrition... Currently Handler of TUGUS FEEDS PRODUCTION in Nigeria.

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