

Use of Predictive Food Microbiology to Determine the Shelf-Life of Foods

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Abstract : Predictive microbiology can be considered as an important field in food microbiology in which it uses predictive models to describe the microbial growth in different food products. Predictive models estimate the growth of microorganisms quickly, efficiently, and in a cost-effective way as compared to traditional methods of enumeration, which are long-lasting, expensive, and time-consuming. The mathematical models used in predictive microbiology are mainly categorised as primary and secondary models. The primary models are the mathematical equations that define the growth data as a function of time under a constant environmental condition. The secondary models describe the effects of environmental factors, such as temperature, pH, and water activity (aw) on the parameters of the primary models, including the maximum specific growth rate and lag phase duration, which are the most critical growth kinetic parameters. The combination of primary and secondary models provides valuable information to set limits for the quantitative detection of the microbial spoilage and assess product shelf-life.

Keywords : shelf-life, growth model, predictive microbiology, simulation

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