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Validation of Food Safety Control Measures – An Overview

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Abstract

Food safety is primarily achieved through preventive measures. Food safety management systems (FSMSs) are designed to manage food safety risks and prevent food contamination. The Hazard Analysis and Critical Control Point (HACCP) system is an internationally recognized system of food safety management whose focus is on process control and the prevention of identified microbiological, physical, and chemical hazards. However, the question arises whether the selected process steps or control measures are the correct ones and effective against the identified potential hazards. Process validation then becomes a vital food safety component. Process validation is defined as “obtaining evidence that a control measure (or combination of control measures) will be capable of effectively controlling the significant food safety hazard” (ISO 22000:2018). Process validation is a science-based, systematic, and preventive approach to food safety management. Hence, process validation is required before the implementation of a control measure or when changes occur concerning the food process, product, or potential hazard that may necessitate re-validation.

The food processing industry in South Africa has matured over the years with a dynamic market for new product development. Consumer demands for safe and high-quality products have also inspired the food industry to explore alternative techniques to traditional processing methods. The food industry is adopting novel applications, ingredients, and processes that offer better quality and safe products. However, it is recommended that anytime there is a change, the food safety risk must be assessed. Food manufacturers are therefore expected to develop and implement food safety control measures that are effective (scientifically validated). Thus, the objective of this overview was to summarize process validation principles and its importance by examining scientific literature (process validation methods, selecting surrogates or pathogenic microorganisms, identifying worst-case scenarios, executing validation studies by food safety experts, collecting and analyzing data, and preparing validation reports). Challenge studies were also found to be appropriate when validating certain processes and/or product formulations. This overview may improve awareness about process validation by the food industry, resulting in better control of potential hazards and ensuring safe food for consumers.

Biography: Wendy Katiyo

Wendy Katiyo recently graduated with a PhD in Food Science from the University of Pretoria. Her PhD study was interdisciplinary, incorporating concepts from food microbiology, food chemistry and sensory and consumer science. She currently works as the research leader for process validation projects at Merieux NutriSciences.