THE APPLICATION OF THE FAILURE MODES AND EFFECTS ANALYSIS (FMEA) METHODOLOGY WITHIN A FOOD SAFETY MANAGEMENT SYSTEM

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Abstract

Failure Modes and Effects Analysis (FMEA) methodology is used for identifying potential failure modes, the causes and effects of each nonconformity for keeping under control the technological processes and to improve the quality of finished products. The aim of this study was the application of the FMEA to improve bread quality. Among the steps and activities required to apply the FMEA methodology is distinguished as specificity the evaluation of Action Priority (AP) and Risk Priority Number (RPN), depending on the severity (S) of consequences of manifestation of nonconformities to the consumer, on the probability of occurrence (O) of a potential hazard for food safety and on the probability of its detection (D). The AP/RPN was determined for all stages of the technological flow specific to the manufacture of bread, for all ingredients and for each category of potential hazards identified: physical (P), chemical (C) and biological (B). Through AP, a quantitative assessment can be made of the potential food safety problems in a system, and respectively a prioritization of implementation of corrective actions (CA) a substantial decrease of nonconformities. The highest values of AP/RPN were observed for biological hazards in the technological stages of bread cooling (AP High/ RPN 270) and packaging (AP High/ RPN 192). After the application of AC, there is a clear decrease in the value of O and D, however the value of S is maintained as a distinct element.

Key words: bread, Failure Modes and Effects Analysis