Using fuzzy set theory for determining toxicity thresholds of product

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Abstract

The quality control of a product is a major and permanent preoccupation of productive enterprise in particular an agribusiness industry. Indeed, the products no conform to the requirements for quality imposed by the standards and the regulations, present risks for the producers and the consumers. Among these products and which is of important nutritional interest, the milk whose composition, the physicochemical properties, make of it a medium very favorable to the multiplication of the pathogenic micro-organisms. The quality of this product thus depends, amongst other things, of the heat treatment aiming at destroying the pathogenic bacteria lasting the phase of pasteurization. Values thresholds establishment of variation parameters of the thermo-resistance of pathogenic micro-organisms is presented as intervals. Consequently, it is often difficult to fix exact values of these parameters to have a good pasteurization. To overcome this difficulty, the objective of this paper consists in proposing the application of fuzzy logic like alternative for values establishment for more precise thresholds. The fuzzy model using fuzzy rule-based system in order to generate adequate temperature and time for a complete deterioration of the pathogenic bacteria in milk. The fuzzy model suggested will be validated by applying it to a process of pasteurization on the Aurès-Batna dairy.

Keywords
Thresholds of toxicity, Pasteurization, Fuzzy rule-based system

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