Modeling the kinetics of survival of \textit{Staphylococcus aureus} in regional yogurt from goat’s milk

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\section*{Abstract}

The aim of this study was to determine the kinetics of the survival of the test strain of \textit{Staphylococcus aureus} in the product investigated. Yogurt samples were contaminated with \textit{S. aureus} to an initial level of $10^3-10^4$ cfu/g. The samples were then stored at four temperatures: 4, 6, 20, 22°C. During storage, the number of \textit{S. aureus} forming colonies in a gram of yogurt was determined every two hours. Based on the results of the analysis culture the curves of survival were plotted. Three primary models were selected to describe the kinetics of changes in the count of bacteria: Cole’s model, a modified model of Gompertz and the model of Baranyi and Roberts. Analysis of the model fit carried out based on the average values of Pearson’s correlation coefficient, between the modeled and measured values, showed that the Cole’s model had the worst fit. The modified Gompertz model showed the count of \textit{S. aureus} as a negative value. These drawbacks were not observed in the model of Baranyi and Roberts. For this reason, this model best reflects the kinetics of changes in the number of staphylococci in yogurt.

\textbf{Key words}: goat milk, primary model, regional food, staphylococci, yogurt

\section*{Introduction}

Over the past few years there has been an increased interest in regional products from farms in the states of the European Union. This phenomenon stems from the EU policy that supports the development of production and distribution of local food (Feenstra 1997, DuPuis and Goodman 2005). Consumers driven by various motivations are increasingly selecting products produced in the nearest vicinity of their households (McIntyre and Rondeau 2011). These prerequisites contributed to the establishment in 1995 of the European Network of Regional Culinary Heritage promoting the increased production and consumption of regional food. Currently, this network includes the following nine Polish regions with