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Czech J. Food Sci.

Valík Ľ., Medveďová A., Liptáková D.:

Application of quantitative approach focused on the competition of lactic acid bacteria culture with coagulase-positive staphylococci under the conditions related to artisanal cheese fermentation

Czech J. Food Sci., 29 (2011): S23-S29

A quantitative analysis of *Staphylococcus aureus* growth was carried out in mill fermented with the mesophilic mixed strain culture of lactic acid bacteria (LAB) in relation to the conditions prevailing during artisanal ewes ' lump cheese production. Both the temperature and initial volume of the culture had a dramatic effect on the behaviour of the *S. aureus* strain under study. Depending on the conditions, the growth, reaching

maximal population density (N_{max}) and a strong inhibition of *S. aureus* were observed. Regression analysis of the results enabled us to explain the relationships between the parameters such as the growth or inhibition rate, lag phase and $N_{max} - N_0$ and the temperature and initial culture density on the other hand. The surface methodology enabled to show that the rate of *S. aureus* inhibition (r_{inh}) was affected by the temperature and volume of LAB inoculum following the equation: $r_{inh} = -0.1302 - 0.02325 \times T - 0.000975 \times T^2 - 0.00001 \times T^2 \times V_0^2$ ($R = 0.965$)

The fact that *S. aureus* increased in number mostly only by about 1 log and did not reach 106 CFU/ml during our model experiments was the most useful for good manufacturing practice. The knowledge obtained in this study concerned with the quantitative behaviour of *S. aureus* including the information on