MATHEMATICAL MODELS TO PREDICT THERMAL INACTIVATION KINETICS OF *LISTERIA INNOCUA* 10528

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M.M.Gil, F.A. Miller, T.R.S. Brandão and C.L.M. Silva

Escola Superior de Biotecnologia, Universidade Católica Portuguesa, R. Dr. António Bernardino de Almeida, 4200-072 Porto, Portugal
e-mail: fmiller@netcabo.pt

The development of accurate and precise models, able to predict the behaviour of microorganisms populations under specific environmental conditions, is of major importance to the food process industries in the development of new systems.

In this work experimental inactivation data of *Listeria innocua* 10528, obtained at 52.5, 55, 57.5, 60, 62.5 and 65ºC, was described by the Gompertz modified model and the temperature effect was included in parameter estimation. The model parameters (maximum inactivation rate, k_{max}, and shoulder parameter, L) were estimated by non-linear regression analysis. The Arrhenius type-equation and a square-root model were used to describe the dependence of k_{max} with temperature. The shoulder was also temperature-dependent and, in this case, the Arrhenius and Williams-Landel-Ferry equations were the models considered. To improve the quality of the estimation, equations that relate the temperature dependence of k_{max} and L were incorporated into the Gompertz model and a global regression analysis was performed using all the isothermal data. The criteria used to conclude about the best models were the quality of the residuals, the value of R^2_{adj}, and confidence intervals of the estimates at 95%. The Statistica® 6.0 Software was used for all regression analysis.