Recent studies on thermal inactivation kinetics

STOFOROS N. (1), GIANNAKOUROU M. (2), STOFOROS G. (1)
1 Agricultural University of Athens, ATHENS, Greece
2 National Technical University of Athens, ATHENS, Greece

In this overview, recently developed procedures for the determination of the kinetic parameters of thermal inactivation of heat labile substances are presented. Concentration data vs processing time under isothermal or dynamic temperature conditions are properly analyzed, stochastically or deterministically, to provide estimates of the thermal inactivation kinetic parameters along with their variation. In the classical 2-step procedure, the confidence intervals of the estimates of the rate constants should be taken into account for proper calculation of the variability of the secondary model parameters. Parameter estimation through experiments under dynamic temperature conditions requires more complicated numerical algorithms and cautious selection of the appropriate temperature profiles. The distribution of the thermal inactivation kinetic parameters affects, subsequently, the lethality distribution of a thermal process, and this should be carefully considered in designing thermal processes.