

Title Modeling the effect of temperature on growth of *Salmonella* in chicken
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Abstract

Growth data of *Salmonella* in chicken were collected at several isothermal conditions (10, 15, 20, 25, 28, 32, 35, 37, 42, and 45 °C) and were then fitted into primary models, namely the logistic model, modified Gompertz model and Baranyi model. Measures of goodness-of-fit such as mean square error, pseudo- R^2 , -2 log likelihood, Akaike's information, and Sawa's Bayesian information criteria were used for comparison for these primary models. Based on these criteria, modified Gompertz model described growth data the best, followed by the Baranyi model, and then the logistic model. The maximum growth rates obtained from each primary model were then modeled as a function of temperature using the modified Ratkowsky model. Pseudo- R^2 values for this secondary model describing growth rate obtained from Baranyi, modified Gompertz, and logistic models were 0.999, 0.980, and 0.990, respectively. Mean square error values for corresponding models were 0.0002, 0.0008, and 0.0009, respectively. Both measures clearly show that the Baranyi model performed better than the modified Gompertz model or the logistic model.