Test for the presence of autocorrelation in the modified Gompertz model used in fitting of Burkholderia sp. strain Neni-11 growth on acrylamide

ABSTRACT

The growth of microorganism on substrates, whether toxic or not usually exhibits sigmoidal pattern. This sigmoidal growth pattern can be modelled using primary models such as Logistic, modified Gompertz, Richards, Schnute, Baranyi-Roberts, Von Bertalanffy, Buchanan three-phase and Huang. Previously, the modified Gompertz model was chosen to model the growth of Burkholderia sp. strain Neni-11 on acrylamide, which shows a sigmoidal curve. The modified Gompertz model relies on the ordinary least squares method, which in turn relies heavily on several important assumptions, which include that the data does not show autocorrelation. In this work we perform statistical diagnosis test to test for the presence of autocorrelation using the Durbin-Watson test and found that the model was adequate and robust as no autocorrelation of the data was found.