FTIR-ATR spectroscopy based metabolite fingerprinting as a direct determination of butter adulterated with lard

ABSTRACT

Adulteration of butter with cheaper animal fats, such as lard, has become an issue in recent years. A simple and rapid analytical method of attenuated total reflectance in Fourier transform infrared spectroscopy was developed in order to determine the lard content in butter. The multivariate calibration of partial least square model for the prediction of adulterant was developed for quantitative measurement. The model yielded the highest regression with the correlation coefficient $(R^2) = 0.999$, its lowest root mean square error estimation $= 0.0947$, and its root mean square error prediction $= 0.0687$, respectively. Cross validation testing evaluates the predictive power of the model. Partial least square model to be effective as their intercept of R^2Y and Q^2Y were 0.08 and –0.34, respectively.