

ABSTRACT

In detecting the chemical compounds on temulawak, the methods that often used are High-Performance Liquid Chromatography (HPLC) and Fourier Transform Infrared Spectroscopy (FTIR). The HPLC method is proven to be accurate to detect the temulawak compounds but the cost is relatively expensive. Alternatively, the cheaper method that can be used is the FTIR method but the main problem is the output data have high dimensions and the variables are correlated. One of the solutions for the high dimensional data problem is reducing dimensions that have high multicollinearity. Discrete Wavelet Transformation (DWT) metode able to reduce dimensions and data multicollinearity in order to create a new data with smaller dimensions. The types of wavelet that will be used in this research are Haar and Daubechies. After the data dimensions have been reduced, the next step is to model the prediction of the reduced data dimensions using the linear calibration approach. Other data dimensions reduction method that's used is the Principal Component Analysis (PCA) method. The end result prove that DWT is able to reduce the data correlation level significantly, from 0.72001 to 0.06715 using the DWT Haar method. The prediction model produce unsatisfying results, with RMSEP testing of 1.47497 for the model from DWT Haar and the average RMSEP testing of 0.95254 for the models from DWT Daubechies.

Keywords: *High-Performance Liquid Chromatography, Fourier Transform Infrared Spectroscopy, Discrete Wavelet Transformation, Haar, Daubechies, Principal Component Analysis.*