Abstract

The indicator of quality determination of the medical plants is the active compounds contained within it. The identification of active compounds in the medicinal plants can be done using the HPLC (High Performance Liquid Chromatography) method and FTIR (Fourier Transform Infrared) method. The process of active compounds identification using HPLC produced high accuracy but the cost will be more expensive compared with the FTIR. However FTIR method generates large dimensional data and high collinearity that hinder the modeling process and affect the solution given. One of the methods that can be used to reduce the dimension is Discrete Wavelet Transform (DWT). This method able to state a good variant and smaller dimension than the actual data set. However, dimension reduction results still have the probability of having high collinearity between wavelet's coefficients. Therefore it is used Partial Least Square (PLS) to handle collinearity problems. The dataset used was used is FTIR curcumin transmittance percentage from 17 observation area with wavelength of 1866. After some examination scenarios the best reduction obtained using TWD is 500. By using PLS method optimal latent vector 14, so the new variable retrieved with the size of (17x14). From the reduction result of TWD-PLS obtained an average correlation 0.07142 smaller than the average of previous correlation 0.71881, obtained results prediction with error value as 0.001709 that been calculated using RMSEP.

Keywords: *Multycollinearity, Discrete Wavelet Transformation, Partial Least Square, Fourier Transform Infrared, High Performance Liquid Chromatography, Linear Calibration.*