ABSTRACT

VERA MAYA SANTI. Spectroscopy Calibration Model With A Genetic Algorithm (GA) Preprocessing (Case Study: Curcuma Medicinal Plant). Supervised by ERFIANI and UTAMI DYAH SYAFITRI.

Multivariate calibration models have been developed usually by using principle component analysis and partial least square regression. This research proposed the suitable modifications of genetic algorithm as an alternative method to develop a calibration model. Genetic algorithm is one of useful tools in the problem of wavelength selection in the case of multivariate calibration performed by partial least square. This method is applied to the measurement of curcuma concentration based on FTIR spectra. Unlike the majority of feature selection methods applied to spectroscopy data, the variables selected by the algorithm often correspond to well-defined and characteristic spectrum regions instead of single variables scattered throughout the spectrum. Based on RMSEP criteria, the performance of genetic algorithm performed by partial least square is a better model than the full-spectrum model or using information from finger print area. Furthermore, the analysis of the selected regions can be a valuable help in understanding which the relevant parts of the spectrum are.

Keywords: Calibration Model, Spectroscopy, Genetic Algorithm