

P-65**Quantitative Analysis of Peroxide Value in Virgin Coconut Oil by Atr-Ftir Spectroscopy**

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Oxidation of fats and oils is an important indicator for performance and shelf life of oils. As other vegetable oils, virgin coconut oil (VCO) is not susceptible to lipid oxidation. Thus, a rapid method for quantitative analysis of peroxide value in VCO was developed in this study using Fourier transform infrared (FTIR) spectroscopy coupled with attenuated total reflectance (ATR). Thirty training samples of VCO were subjected to oxidative condition in convection oven at temperature of 100°C up to 20 days to accelerate the lipid oxidation process. The peroxide values were determined periodically using the standard method of American Oil Chemists' Society (AOCS) and then analyzed with FTIR spectroscopy. Calibration model using partial least square (PLS) was developed by studying the spectral features for regions that correlated with peroxide value content (absorption of compounds derived from hydroperoxide band near 3600 to 2800 cm^{-1}) and validated by removing one sample at a time. A linear calibration curve was obtained for the actual value against FTIR predicted value which yields an equation of $y = 1.0398x + 0.0468$ and satisfactory results of root mean square error of prediction (RMSEP) of 0.4978 and correlation coefficient (R^2) of 0.9826. Thus, FTIR spectroscopy with PLS regression can serve as important tools for determining the peroxide value in VCO. Application of FTIR is rapid, accurate and environmental friendly compared to the conventional chemical analyses.

Keywords: Ftir, peroxide value, virgin coconut oil.
