

## INTISARI

Praktik pemalsuan dalam industri minyak harus diidentifikasi untuk menjamin minyak berkualitas tinggi. Dalam penelitian ini, spektrofotometri FTIR (Fourier Transform Infrared) dikombinasi dengan kalibrasi multivariat digunakan untuk autentifikasi minyak zaitun dari minyak biji rambutan (MBR). Minyak zaitun, MBR, dan campuran minyak zaitun-MBR dianalisis menggunakan spektrofotometer FTIR pada daerah inframerah tengah ( $4000\text{-}650\text{ cm}^{-1}$ ).

Hasil penelitian menunjukkan bahwa spektra FTIR normal pada daerah bilangan gelombang  $1446\text{-}1411$  dan  $2369\text{-}1770\text{ cm}^{-1}$  untuk analisis MBR ace, dan  $1715\text{-}1705$  dan  $2945\text{-}2872\text{ cm}^{-1}$  untuk analisis MBR binjai dikombinasikan dengan kalibrasi multivariat regresi komponen utama (PCR) menawarkan model kuantitatif terbaik. Hasil yang diperoleh untuk prediksi kadar MBR dalam minyak zaitun dengan nilai  $R^2$  0,9955 dalam model kalibrasi, dan 0,9915 dalam model validasi untuk MBR binjai serta 0,9425 dan 0,9863 untuk MBR ace. Kandungan asam lemak jenuh MBR ace dan binjai masing-masing sebesar 46,69% dan 55,09%.

**Kata Kunci** : minyak zaitun, minyak biji rambutan, PCR, analisis diskriminan, autentifikasi

## ABSTRACT

The adulteration practice of high price oils with lower price oils in fats and oils industry must be identified to assure the quality of high quality oil. In this study, Fourier transform infrared (FTIR) spectroscopy in combination with chemometrics of multivariate calibration was used for authentication of extra virgin olive oil (EVOO) from rambutan seed fat (RSF). EVOO, RSF, and the mixture EVOO-RSF were prepared and spectroscopically scanned using FTIR spectrophotometer at mid infrared region ( $4000\text{-}650\text{ cm}^{-1}$ ) using sampling of attenuated total reflectance (ATR).

The results showed that the normal FTIR spectra is at wavenumbers region of  $1446\text{-}1411$  and  $2369\text{-}1770\text{ cm}^{-1}$  for RSF ace, while  $1715\text{-}1705$  and  $2945\text{-}2872\text{ cm}^{-1}$  for RSF binjai combined with multivariate calibration of principle component regression (PCR) offered the best quantitative model. For prediction of RSF levels in EVOO, the quantitative model has  $R^2$  value of 0.9955 in calibration model, and 0.9915 in validation model for RSF binjai, while 0.9425 and 0.9863 for RSF ace. The content of saturated fatty acid RSF ace and binjai respectively 46,69% dan 55,09%.

**Keywords:** olive oil, rambutan seed fat, principle component regression, discriminant analysis, authentication.