INTISARI

Kasus penambahan bahan kimia obat (BKO) ke dalam obat tradisional masih terjadi. Parasetamol dan asam mefenamat dilaporkan sebagai dua dari beberapa BKO yang ditambahkan pada obat tradisional. Dosis BKO yang tidak pasti pada obat tradisional dapat membahayakan pasien.

Penelitian ini mengkombinasikan spektroskopi *Fourier transform infrared* (FTIR) dengan kemometrika untuk mengidentifikasi dan memprediksi kandungan parasetamol dan/atau asam mefenamat dalam obat tradisional. Obat tradisional dengan nomor izin edar digunakan sebagai matriks obat tradisional (MOT) dalam penelitian ini. Campuran biner atau terner MOT dengan parasetamol dan/atau asam mefenamat dibaca dengan spektrofotometer FTIR. *Discriminant analysis* (DA) dilakukan terhadap spektra IR sampel untuk klasifikasi MOT yang mengandung parasetamol dan/atau asam mefenamat dengan MOT murni. Model kalibrasi *partial least square* (PLS) dan *principal component regression* (PCR) dibangun untuk analisis kuantitatif kadar parasetamol dan/atau asam mefenamat dalam campuran biner dan terner dengan MOT.

Metode yang dibangun dapat digunakan untuk mengidentifikasi dan memprediksi kandungan parasetamol dan/atau asam mefenamat dalam obat tradisional. Model PLS memberikan prediksi terbaik kadar parasetamol dalam campuran biner pada kombinasi bilangan gelombang 3500-2750 cm^{-1}, 1800-1300 cm^{-1}, dan 1200-950 cm^{-1} dengan spektra normal. Model PLS juga memberikan prediksi terbaik kadar asam mefenamat dalam campuran biner pada bilangan gelombang 4000-650 cm^{-1} dengan spektra normal. Pada campuran terner, prediksi terbaik parasetamol dan asam mefenamat terner diperoleh dengan model PCR pada bilangan gelombang 4000-650 cm^{-1} dengan spektra derivat kedua.

Kata kunci: obat tradisional, parasetamol, asam mefenamat, spektroskopi FTIR, kemometrika

ABSTRACT

The cases of adding chemical drugs to traditional medicines still occur. Paracetamol and mefenamic acid are reported as two of several chemical drugs added. Uncertain dose of chemical drugs in traditional medicines could endanger patients.

Fourier transform infrared (FTIR) spectroscopy combined with chemometrics were developed to classify and predict paracetamol and mefenamic acid adulterant in traditional medicine. Well-known and BPOM-registered traditional medicine were included in the study as a matrix. The matrix in a binary or ternary mixture with paracetamol and mefenamic acid were scanned using FTIR spectroscopy. Discriminant analysis (DA) were performed with IR spectra to classify which matrix containing paracetamol and/or mefenamic acid and not. Partial least square (PLS) and principal component regression (PCR) calibration models were performed to quantify paracetamol and/or mefenamic levels in the binary and ternary mixtures with matrix.

The developed method can be used to identify and predict paracetamol and/or mefenamic acid adulterant in traditional medicine. The best estimation of paracetamol level in binary mixtures were generated from PLS model with the combination of 3500-2750 cm^{-1}, 1800-1300 cm^{-1}, and 1200-950 cm^{-1} wavenumbers and normal spectra. Meanwhile mefenamic acid had the best PLS model with the wavenumber of 4000-650 cm^{-1} and normal specta. In the ternary mixtures, paracetamol and mefenamic acid levels were best predicted by using PCR model with the wavenumbers of 4000-650 cm^{-1} dan second derivative spectra.

Key word: traditional medicine, paracetamol, mefenamic acid, FTIR spectroscopy, chemometrics