

ABSTRAK

Asam kafeat merupakan salah satu senyawa polifenol yang terdapat di dalam kopi dan dilaporkan memiliki aktivitas biologis sebagai antidiabetes. Analisis kandungan asam kafeat pada seduhan serbuk kopi robusta (*Coffea canephora* Pierre ex Froehner) dilakukan untuk mengetahui kadarnya di dalam secangkir kopi. Oleh karena itu, diperlukan metode yang tervalidasi untuk menentukan kandungan asam kafeat dengan tepat. Penelitian ini bertujuan untuk memvalidasi metode analisis Kromatografi Cair Kinerja Tinggi (KCKT) fase terbalik pada kondisi optimum yang telah dilakukan pada rangkaian penelitian sebelumnya. Jenis penelitian yang digunakan adalah deskriptif observasional. Variabel yang diteliti adalah sistem KCKT fase terbalik teroptimasi, meliputi komposisi fase gerak metanol:asetonitril:asam format cair pH $2,9 \pm 0,1$ (10:15:75 v/v/v) dan laju alir 1,0 mL/menit. Hasil penelitian menunjukkan bahwa metode yang digunakan spesifik dan selektif untuk mengukur asam kafeat dalam seduhan serbuk kopi robusta ($R_s \geq 1,5$), serta linieritas yang baik pada konsentrasi 5,36–32,13 $\mu\text{g/mL}$ dengan nilai $r = 0,9993$. Batas deteksi dan kuantitasi yang diperoleh adalah 0,08 $\mu\text{g/mL}$ dan 0,24 $\mu\text{g/mL}$. Rata-rata perolehan kembali *intra-day* dan *inter-day* berturut-turut yaitu 92,26–102,94% dan 94,89–102,96%. Presisi *intra-day* dan *inter-day* dinyatakan sebagai simpangan baku relatif (SBR) dengan persentase 3,14%; 1,27%; dan 2,03%; berturut-turut pada konsentrasi rendah, sedang, dan tinggi.

Kata kunci: Seduhan serbuk kopi robusta, asam kafeat, KCKT, validasi

ABSTRACT

Caffeic acid is one of the polyphenolic compounds that have been identified in coffee, and it has been reported to possess biological activity as an antidiabetic agent. The present study aims to analyse the content of caffeic acid in brewed roasted robusta coffee ground (*Coffea canephora* Pierre ex Froehner) in order to determine its level in a cup of coffee. To ensure accurate determination of caffeic acid content, a validated method is required. The present study aims to validate the reversed phase High Performance Liquid Chromatography (HPLC) analysis method at optimum conditions that has been carried out in a series of previous studies. The research design employed was descriptive observational. The study was performed on the optimised reversed-phase HPLC system, including the mobile phase composition of methanol:acetonitrile:formic acid buffer pH 2.9 (10:15:75 v/v/v) and a flow rate of 1.0 mL/min. The results showed that the method used was specific and selective for the measurement of caffeic acid in Robusta coffee brew ($R_s \geq 1.5$) and had attained linearity at concentrations of 5.36–32.13 $\mu\text{g/mL}$ with a value of $R^2 = 0.9987$ and $r = 0.9993$. The limits of detection and quantitation obtained were 0.08 $\mu\text{g/mL}$ and 0.24 $\mu\text{g/mL}$, determined respectively. The average intra-day and inter-day recoveries were 92.26–102.94% and 94.89–102.96%, respectively. Intra-day and inter-day precision were expressed as relative standard deviation (RSD), with percentages of 3.14%; 1.27%; and 2.03%; at low, medium, and high concentrations, respectively.

Keywords: Brewed roasted robusta coffee ground, caffeic acid, HPLC, validation.