

ABSTRAK

Kopi robusta adalah salah satu jenis kopi yang diminati oleh masyarakat. Kafein, salah satu komponen dalam kopi memiliki efek stimulan yang bekerja dengan cara menstimulasi otak dan sistem saraf pusat. Penelitian ini bertujuan untuk mendapatkan metode yang valid dalam menetapkan kadar kafein dalam kopi robusta merk “x” dan membandingkannya dengan batas konsumsi kafein yang dianjurkan. Metode yang digunakan adalah *High Performance Liquid Chromatography* dengan fase gerak akuades : metanol (50:50 v/v). Untuk memastikan bahwa hasil pengukuran memenuhi persyaratan penggunaan, metode analisis harus memenuhi parameter yang ada, yaitu selektivitas, linearitas, rentang, akurasi, dan presisi. Berdasarkan hasil validasi metode analisis, didapat selektivitas dengan nilai resolusi sebesar 4,902. Linearitas dengan nilai koefisien korelasi sebesar 0,9990 pada rentang 5, 10, 15, 20, 25, 30, 35 ppm. LOD dan LOQ sebesar 1,65 ppm dan 5,01 ppm. Akurasi dan presisi secara *intraday* dan *interday* pada konsentrasi 15, 20, 25 ppm secara berturut-turut. Pada pengujian secara *intraday*, nilai rata-rata %*recovery* dan %KV didapat sebesar 94,75%; 96,25%; 96,85% dan 2,82%; 2,98%; 3,02%. Pada pengujian secara *interday* didapat hasil sebesar 95,80%; 96,25%; 96,85% dan 3,18%; 1,40%; 2,87%. Akurasi dan presisi dengan pengujian sampel adisi secara *intraday* dan *interday*, penambahan baku pada sampel dengan konsentrasi 5, 10, 15 ppm secara berturut-turut. Pada pengujian sampel adisi secara *intraday* secara rata-rata nilai %*recovery* dan %KV didapat sebesar 99,07%; 99,51%; 99,55% dan 2,88%; 1,66%; 1,82%. Pada pengujian sampel adisi secara *interday* didapat hasil sebesar 99,63%; 98,13%; 99,36% dan 2,91%; 1,53%; 3,49%.

Kata Kunci : analisis kuantitatif, kafein, kopi robusta, *High Performance Liquid Chromatography*, validasi metode.

ABSTRACT

Robusta coffee is a type of coffee that is popular among the public. Caffeine, one of the components in coffee, has a stimulant effect that works by stimulating the brain and the central nervous system. This study aims to develop a valid method for determining the caffeine content in “x” brand robusta coffee and to compare it with the recommended caffeine intake limit. The method used was High-Performance Liquid Chromatography with a mobile phase of distilled water and methanol (50:50 v/v). To ensure that the measurement results meet usage requirements, the analytical method must satisfy the established parameters, namely selectivity, linearity, range, accuracy, and precision. Based on the results of the analytical method validation, the selectivity was determined to have a resolution value of 4.902. Linearity with a correlation coefficient of 0.9990 in the range of 5, 10, 15, 20, 25, 30, and 35 ppm. The LOD and LOQ were 1.65 ppm and 5.01 ppm, respectively. Intraday and interday accuracy and precision at concentrations of 15, 20, and 25 ppm, respectively. In the intraday testing, the average values for %recovery and %CV were 94.75%; 96.25%; 96.85% and 2.82%; 2.98%; 3.02%. In the interday tests, the results were 95,80%; 96.25%; 96.85% and 3.18%; 1.40%; 2.87%. Accuracy and precision were assessed through intraday and interday spiked sample testing, with standard additions to samples at concentrations of 5, 10, and 15 ppm, respectively. In intraday spiked sample testing, the average values for %recovery and %CV were 99.07%; 99.51%; 99.55% and 2.88%; 1.66%; 1.82%. In the interday spiked sample tests, the results were 99.63%; 98.13%; 99.36% and 2.91%; 1.53%; 3.49%.

Keywords: quantitative analysis, caffeine, robusta coffee, High-Performance Liquid Chromatography, method validation

