ABSTRAK

Telah dilakukan analislis campuran efedrin HCl dan teofilin dalam sediaan tablet menggunakan metoda KLT-Densitometri. Efedrin HCl dan teofilin diekstraksi dari komponen tablet dengan metanol sebagai pelarut. Efedrin HCl dan teofilin dipisahkan dengan metoda KLT menggunakan plat silica gel 60 F_{245} sebagai fase diam, campuran methanol 10 mL ditambah 3 tetes asam asetat sebagai fase gerak. Efedrin HCl dideteksi dengan menyemprot plat KLT dengan laruran Ninhidrin 0,5% dalam aquabides kemudian dipanaskan selama 10 menit pada suhu 105^{o}C pada oven, sedangkan teofilin dideteksi dengan lampu UV pada 254 nm. Diperoleh kromatogram efedrin HCl dengan Rf 0,56 dan kromatogram teofilin dengan Rf 0,77. Kromatogram efedrin HCl dianalisis menggunakan *TLC-Scanner* pada panjang gelombang 505 sedangkan kromatogram teofilin pada panjang gelombang 272 nm. Larutan standar efedrin HCl pada rentang 100-500 µg/mL menghasilkan persamaan regresi y=1836,6365 + 7,8882x dengan R^2 = 0,9905. Nilai LOD dan LOQ dari larutan standard efedrin HCl memberikan nilai 36,640 µg/mL dan 122,135 µg/mL. Hasil perhitungan presisi *interday* larutan standar efedrin HCl diperoleh nilai rata-rata % RSD 1,3487 %. Penambahan larutan standar efedrin HCl sebanyak 40%, 80%, dan 120% pada larutan sampel didapatkan % perolehan kembali dengan nilai 99,796% , 97,00% dan 96,404%. Larutan standar teofilin pada rentang 300-1500 µg/mL menghasilkan persamaan regresi y = 8,1329x + 244,22 dengan R^2 = 0,9955. Nilai LOD dan LOQ dari larutan standard teofilin memberikan nilai 161,291 µg/mL dan 537,638 µg/mL. Hasil perhitungan presisi *interday* larutan standar teofilin diperoleh nilai rata-rata % RSD 1,2775 %. Penambahan larutan standar teofilin sebanyak 40%, 80%, dan 120% pada larutan sampel didapatkan % perolehan kembali dengan nilai 89,573%, 88,320% dan 93,292%. Diperoleh hasil analisis kadar efedrin HCl dan teofilin sebesar 99,33 ± 0,54 % dan 100,43 ± 0,582 %. Disimpulkan bahwa metoda KLT-Densitometri merupakan metoda yang sederhana, sensitive, akurat dan ekonomis untuk penentuan kuantitatif campuran efedrin HCl dan teofilin dalam sediaan tablet.

Kata kunci : Efedrin HCl, Teofilin, KLT-Densitometri, Tablet

ABSTRACT

Analysis of the mixture of ephedrine HCl and theophylline combination from tablet has been analysed by TLC-Densitometry method. Ephedrine HCl and theophylline were extracted from tablet constituent with methanol as solven. Ephedrine HCl and theophylline were separated by TLC method using silica gel 60 F_{245} as stationary phase and the mixture of methanol 10 mL plus acetic acid as the mobile phase. Ephedrine HCl was detected by spraying the TLC plat with ninhydrin solution 0.5 % in aquabides then heat in oven at 105^{o}C for 10 minute, while theophylline was detected by UV-lamp at 254 nm. On the plat can be showed the chromatogram of ephedrine HCl with Rf value 0.56 and theophylline with Rf value 0,77. Ephedrine HCl's Chromatogram was analyzed with the TLC-scanner at 505 nm while theophylline's chromatogram was analyzed by TLC-scanner at 272 nm. Ephedrine HCl standard solution with concentration range at 100-500 µg/mL gave regression equation y=1836.6365 + 7.8882x with R^2 = 0.9905. LOD dan LOQ of Ephedrine HCl standard solution gave result of 36.640 µg/mL and 122.135 µg/mL. Interday precision of Ephedrine HCl standard solution gave average % RSD value 1.3487 %. The addition of 40%, 80%, dan 120% Ephedrine HCl standard in sample solution gave the recovery value 99.796% , 97.00% dan 96.404%. Theophylline standard solution with concentration range at 300-1500 µg/mL gave regression y = 8.1329x + 244.22 with R^2 = 0.9955. LOD dan LOQ of theophylline standard solution gave result of 161.291 µg/mL and 537.638 µg/mL. Interday precision of theophylline standard solution gave average % RSD value 1.2775 %. The addition of 40%, 80%, dan 120% theophylline standard in sample solution gave the recovery value 89.573%, 88.320% dan 93.292%. The analysis of ephedrine HCl and theophylline from sample gave concentration level of 99,33 ± 0,54 % dan 100,43 ± 0,582 % respectively. It can be concluded that TLC-Densitometry method is a simple, sensitive, accurate, and economic method for quantitative determination of the mixture of ephedrine HCl and theophylline in tablet dosage form.

Keyword : Ephedrin HCl, Theophylline, TCL-densitometry, Tablet