

Analisis kandungan asam kojat dalam berbagai sediaan kosmetik secara kromatografi cair kinerja tinggi

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Abstrak

Asam kojat digunakan dalam sediaan kosmetik untuk membantu proses depigmentasi kulit seperti penghilangan flek akibat penuaan dan kasus hiperpigmentasi. Metode kromatografi cair kinerja tinggi dengan detektor UV untuk menganalisis asam kojat dalam kosmetik telah banyak dikembangkan. Tujuan penelitian ini adalah memperoleh kondisi analisis optimum asam kojat secara KCKT dan validasinya untuk penetapan kadar asam kojat dalam kosmetik. Sampel diekstraksi dengan KH_2PO_4 0,05 M (pH 2,5) dan dianalisis menggunakan kolom C18-RP, Whatman. Campuran 0,05 M KH_2PO_4 -metanol (95:5), pH 2,5 sebagai fase gerak dengan laju alir 1,2 ml/menit.

Detektor UV pada panjang gelombang 270 nm. Waktu retensi asam kojat adalah 6,0 menit. Uji linieritas pada rentang konsentrasi 12-36 ppm memberikan nilai koefisien korelasi (r) 0,9998. Batas deteksi 0,42 ppm dan batas kuantitasi 1,39 ppm. Metode ini memberikan hasil uji perolehan kembali asam kojat adalah $101,72\% \pm 1,4689\%$. Kadar asam kojat dalam tiga sampel kosmetik adalah 0,767% b/b (sampel Dw), 1,079% b/b (sampel Cv), dan 0,765 % b/b (sampel Wk).

Kojic acid is used in cosmetics formulation for helping depigmentation of skin including whitening age spots and hyperpigmentation. A high performance liquid chromatographic method with UV detector for analyses of kojic acid in cosmetic was developed. The aim of this research was to find out optimum condition of kojic acid and validate an analytical method for the quantification of kojic acid in cosmetics by HPLC. Samples were extracted with 0,05 M KH_2PO_4 buffer solution (pH 2,5) and analyzed using a Whatman C18-RP column. A mixture of 0,05 M KH_2PO_4 and methanol 95:5 ratio (pH 2,5) was used as mobile phase at flow rate 1,2 ml/minute.

The UV detector was set at 270 nm. The retention time needed by kojic acid is 6,0 minute. Linearity was established for range of concentration 12 - 36 ppm with coefficient of correlation of 0,9998. The limit of detection (LOD) and the limit of quantitation (LOQ) were 0,42 ppm and 1,39 ppm. This method have kojic acid recovery was $101,72\% \pm 1,4689\%$. Acid kojic detected in three samples of cosmetics is 0,767% w/w for sample Dw, 1,079% w/w for sample Cv and 0,765% w/w for sample Wk.