VALIDASI METODE ANALISIS PENETAPAN KADAR ASAM RETINOAT DALAM KRIM *ANTI AGING* DI *E-COMMERCE* DENGAN KROMATOGRAFI CAIR KINERJA TINGGI

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Abstrak

Asam retinoat merupakan senyawa yang efektif digunakan dalam produk krim *anti aging* karena kemampuannya mempercepat regenerasi kulit. Penggunaan asam retinoat secara ilegal dalam kosmetik tanpa izin edar di *e-commerce* masih sering ditemukan. Penelitian ini bertujuan untuk memvalidasi metode analisis penetapan kadar asam retinoat menggunakan Kromatografi Cair Kinerja Tinggi (KCKT) serta menganalisis kadar asam retinoat pada sampel krim *anti aging*. Metode penelitian dilakukan dengan menggunakan komposisi eluen metanol:air:asam asetat glasial (70:30:0,5) pada instrumen KCKT dengan kolom C18 dan laju alir 1 ml/menit. Hasil validasi metode diperoleh nilai parameter linearitas, akurasi, presisi, rentang, dan spesifisitas yang sesuai pedoman ICH. Identifikasi awal menggunakan Kromatografi Lapis Tipis (KLT) menunjukkan 5 dari 18 sampel krim *anti aging* positif mengandung asam retinoat. Analisis kuantitatif dengan KCKT menunjukkan kadar asam retinoat pada sampel positif berturut-turut sebesar 0,0034% (S1); 0,0008% (S3); 0,0007% (T6); 0,0021% (L3); dan 0,0024% (L4). Uji signifikansi menggunakan metode Kruskal-Wallis menghasilkan nilai signifikansi <0,05, sehingga dapat disimpulkan terdapat perbedaan kadar asam retinoat yang signifikan antara sampel S1, S3, T6, L3, dan L4.

Kata Kunci: Asam retinoat, KCKT, KLT, Krim *Anti Aging*, Validasi Metode

ANALYTICAL METHOD VALIDATION OF RETINOIC ACID QUANTIFICATION IN ANTI AGING CREAMS ON E-COMMERCE PLATFORMS USING HIGH PERFORMANCE LIQUID CHROMATOGRAPHY

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Abstract

Retinoic acid is an effective compound widely used in *anti aging* cream products due to its ability to accelerate skin regeneration. However, the illegal use of retinoic acid in cosmetics without distribution permits is still frequently found in e-commerce platforms. This study aims to validate an analytical method for determining the concentration of retinoic acid using High Performance Liquid Chromatography (HPLC) and to analyze its concentration in *anti aging* cream samples. The research was conducted using an eluent composition of methanol:water:glacial acetic acid (70:30:0.5) on an HPLC instrument equipped with a C18 column and a flow rate of 1 mL/min. The method validation results showed that the parameters for linearity, accuracy, precision, range, and specificity met the ICH guidelines. Identification using Thin Layer Chromatography (TLC) revealed that 5 out of 18 tested *anti aging* cream samples were positive for retinoic acid content. Quantitative analysis using HPLC indicated that the retinoic acid concentrations in the positive samples were as follows: 0,0034% (S1); 0,0008% (S3); 0,0007% (T6); 0,0021% (L3); and 0,0024% (L4). A significance test using the Kruskal-Wallis method yielded a p value of <0.05, indicating a significant difference in retinoic acid concentrations among samples S1, S3, T6, L3, and L4.

Keywords: Anti Aging Cream, HPLC, Method Validation, Retinoic Acid, TLC