

ANALISIS KANDUNGAN ASAM RETINOAT PADA KRIM ANTI JERAWAT YANG BEREDAR DI *E-COMMERCE* DENGAN METODE KLT-DENSITOMETRI

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INTISARI

Latar belakang: Asam retinoat merupakan senyawa aktif yang dapat digunakan dalam krim anti jerawat, namun penggunaannya diawasi ketat oleh BPOM karena efek samping seperti iritasi, kemerahan, hingga pengelupasan kulit berlebihan. Maraknya penjualan krim anti jerawat secara bebas melalui platform *e-commerce* menimbulkan potensi peredaran produk yang mengandung asam retinoat. Berdasarkan hal tersebut, dilakukan penelitian untuk mengetahui kandungan asam retinoat dalam krim anti jerawat yang dijual bebas di *e-commerce*.

Metode Penelitian: Penelitian ini menggunakan metode KLT-densitometri untuk analisis kualitatif dan kuantitatif. Uji kualitatif dilakukan dengan mendeteksi adanya bercak pada sinar UV dan nilai Rf pada plat KLT serta Fase gerak yang digunakan adalah n-heksan:aseton dengan perbandingan 7:4 menghasilkan spot yang lebih jelas dengan nilai Rf yang baik. Sedangkan uji kuantitatif menggunakan densitometer dengan panjang gelombang 337 nm untuk mengukur kadar senyawa asam retinoat.

Hasil Penelitian: Analisis kualitatif menunjukkan 6 dari 7 sampel positif mengandung senyawa asam retinoat dan analisis kuantitatif menunjukkan kadar asam retinoat pada tujuh sampel krim anti jerawat (A–G) berturut-turut sebesar 0,00421%; 0,00270%; 0,00664%; n.a, 0,00283%; 0,00285%; dan 0,00334%. Nilai CV (%) sampel didapatkan >5%, yang mengindikasikan ketidakstabilan replikasi. Hal ini dapat terjadi karena pemisahan sampel yang belum optimal, replikasi yang dilakukan dengan plat yang berbeda dan masih banyak kadar yang tidak dapat dikuantifikasi.

Kesimpulan: Sampel krim anti jerawat yang beredar di *e-commerce* yaitu sampel A, B, C, E, F dan G positif mengandung senyawa asam retinoat namun hasilnya perlu divalidasi kembali untuk mendapatkan hasil yang akurat dan presisi.

Kata Kunci: Asam retinoat, *E-commerce*, KLT-Densitometri, Krim anti jerawat.

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ANALYSIS OF RETINOIC ACID CONTENT IN ACNE CREAMS SOLD ON E-COMMERCE PLATFORMS USING THE TLC-DENSITOMETRY METHOD

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ABSTRACT

Background: Retinoic acid is a commonly used active ingredient in acne treatment creams. However, its usage is tightly regulated by the Indonesian Food and Drug Authority (BPOM) due to potential side effects such as skin irritation, redness, and excessive peeling. With the growing number of skincare products sold on e-commerce platforms, there is a concern that some products may contain undeclared or excessive levels of retinoic acid. This study aims to identify and quantify the presence of retinoic acid in acne creams available on these platforms.

Methods: Thin-layer chromatography (TLC) combined with densitometry was used for both qualitative and quantitative analysis. For the qualitative test, samples were examined under UV light, and R_f values were observed to confirm the presence of retinoic acid. A mobile phase of n-hexane and acetone in a 7:4 ratio was used, resulting in well-separated and visible spots. Quantitative analysis was carried out using a densitometer at a wavelength of 337 nm to measure retinoic acid concentrations.

Results: Qualitative analysis showed that six out of seven acne cream samples tested positive for retinoic acid. Quantitative analysis revealed that the concentrations of retinoic acid in the seven samples (A–G) were 0.00421%, 0.00270%, 0.00664%, n.a, 0.00283%, 0.00285%, and 0.00334%, respectively. The coefficient of variation (CV%) for the samples was greater than 5%, indicating instability in the replication results. This may have been caused by suboptimal sample separation, the use of different TLC plates for each replication, and the presence of retinoic acid levels in some samples that could not be accurately quantified.

Conclusion: The analysis revealed that the anti-acne cream samples obtained from e-commerce platforms, specifically samples A, B, C, E, F, and G, tested positive for the presence of retinoic acid. Nevertheless, further validation is required to ensure the reliability, accuracy, and precision of the results.

Keywords: Acne cream, E-commerce, Retinoic acid, TLC-Densitometry

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