

Penetapan Kadar Niasinamida pada Toner Kosmetik Menggunakan Metode Spektrofotometri UV

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ABSTRAK

Penggunaan niasinamida dalam produk kosmetik, terutama toner, semakin populer berkat kemampuannya mengatasi hiperpigmentasi, mempertahankan kelembapan, dan melindungi kulit dari kerusakan lingkungan. Penelitian ini bertujuan menentukan kadar niasinamida dalam toner kosmetik menggunakan metode spektrofotometri UV, yang dikenal memiliki sensitivitas dan akurasi tinggi dalam analisis kuantitatif. Pengukuran absorbansi dilakukan pada panjang gelombang maksimum 262 nm, dengan validasi melalui kurva kalibrasi, batas deteksi, batas kuantisasi, akurasi, dan presisi. Hasil penelitian menunjukkan hubungan linear yang kuat antara konsentrasi niasinamida dan absorbansi, dengan persamaan regresi $y = 0,021x - 0,0015$ dan koefisien determinasi (r) sebesar 0,9996. Rata-rata persentase recovery untuk akurasi berada pada kisaran 86,78%, 105,11%, dan 116,79%. Uji presisi menghasilkan nilai *Relative Standard Deviation* (RSD) sebesar 1,97%, 1,85%, dan 1,84%. Kadar rata-rata niasinamida dalam tiga sampel toner masing-masing tercatat sebesar 2,01%, 5,00%, dan 2,00%, menunjukkan produk tersebut aman dan sesuai dengan standar BPOM. Metode spektrofotometri UV efektif digunakan untuk analisis niasinamida dalam toner kosmetik, mendukung kualitas dan keamanan produk di pasaran.

Kata Kunci : Niasinamida, Hiperpigmentasi, Spektrofotometri UV

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ABSTRACT

The use of niacinamide in cosmetic products, especially toners, is gaining popularity thanks to its ability to overcome hyperpigmentation, retain moisture, and protect the skin from environmental damage. This study aims to determine the level of niacinamide in cosmetic toners using the UV spectrophotometry method, which is known to have high sensitivity and accuracy in quantitative analysis. Absorbance measurements were performed at a maximum wavelength of 262 nm, with validation through calibration curves, detection limits, quantization limits, accuracy, and precision. The results showed a strong linear relationship between niacinamide concentration and absorbance, with the regression equation $y = 0.021x - 0.0015$ and the determination coefficient (r) of 0.9996. The average recovery percentage for accuracy is in the range of 86.78%, 105.11%, and 116.79%. The precision test produced Relative Standard Deviation (RSD) values of 1.97%, 1.85%, and 1.84%. The average levels of niacinamide in the three toner samples were recorded at 2.01%, 5.00%, and 2.00%, respectively, indicating that the product is safe and in accordance with BPOM standards. The UV spectrophotometry method is effectively used for the analysis of niacinamide in cosmetic toners, supporting the quality and safety of products on the market

Keywords : Niacinamide, Hyperpigmentatio, UV Spectrophotometry