

ABSTRAK

Kosmetik dapat mengalami kontaminasi oleh logam berat, salah satunya timbal (Pb) yang berpotensi membahayakan kesehatan apabila terakumulasi dalam tubuh. Penelitian ini dilakukan untuk memvalidasi metode analisis serta menentukan kandungan timbal (Pb) pada sampel bedak padat yang beredar di *e-commerce* serta mengevaluasi kesesuaiannya dengan batas aman yang ditetapkan BPOM. Penelitian dilakukan terhadap enam sampel bedak padat yang dipilih berdasarkan kriteria inklusi dan eklusi. Analisis kualitatif dilakukan menggunakan pereaksi KI 10%, NaOH 2N, dan HCl 2N, sedangkan analisis kuantitatif dilakukan menggunakan Spektrofotometri Serapan Atom (SSA). Berdasarkan hasil analisis, sampel B, C, dan D positif mengandung Pb. Hasil validasi metode memenuhi persyaratan dengan nilai koefisien korelasi (r) 0,9985, LOD 0,1268 ppm, LOQ 0,4228 ppm, %RSD 1,8887%, dan %recovery 95,6761%. Kadar Pb pada sampel B, C, dan D diperoleh berturut-turut adalah 27,3685 mg/kg, 19,8470 mg/kg, dan 6,6382 mg/kg. Mengacu pada Peraturan BPOM Nomor 12 Tahun 2024, sampel B tidak sesuai dengan standar yang ditetapkan karena melampaui batas maksimum 20 mg/kg, sedangkan sampel C dan D masih memenuhi persyaratan.

Kata Kunci: timbal (Pb), bedak padat, spektrofotometri serapan atom, validasi metode, kosmetik.

ABSTRACT

Cosmetic can be contaminated by heavy metals, one of which is lead (Pb), which has the potential to harm health products and potentially pose health risks when accumulated in the body. This study aimed to validate the analytical method and determine the lead (Pb) content in compact powder products marketed through e-commerce platforms, as well as to evaluate their compliance with the safety limits established by the Indonesian Food and Drug Authority (BPOM). The study was conducted on six compact powder samples selected based on inclusion and exclusion criteria. Qualitative analysis was performed using 10% potassium iodide (KI), 2 N sodium hydroxide (NaOH), and 2 N hydrochloric acid (HCl) reagents, while quantitative analysis was carried out using Atomic Absorption Spectrophotometry (AAS). The results showed that samples B, C, and D tested positive for the presence of Pb. The method validation results met the acceptance criteria, with a correlation coefficient (r) of 0.9985, a limit of detection (LOD) of 0.1268 ppm, a limit of quantification (LOQ) of 0.4228 ppm, a relative standard deviation (%RSD) of 1.8887%, and a recovery value of 95.6761%. The Pb concentrations in samples B, C, and D were 27.3685 mg/kg, 19.8470 mg/kg, and 6.6382 mg/kg, respectively. Based on BPOM Regulation Number 12 of 2024, sample B did not comply with the requirements because its Pb content exceeded the maximum allowable limit of 20 mg/kg, whereas samples C and D complied with the established safety standards.

Keywords: *lead (Pb), compact powder, atomic absorption spectrophotometry, method validation, cosmetics.*