DEVELOPMENT ANALYSIS OF CHROMIUM(III) DAN CHROMIUM(VI) IN GREEN ALUM SAMPLE FROM PT BATANG ALUM INDUSTRIE

by Suyanta, dkk

ABSTRACT

This study aims to determine the optimum pH and complex stability time for the analysis of Cr(VI) in PT Batang Alum Industrie samples using a UV-Vis spectrophotometer, validate the developed UV-Vis spectrophotometric method for Cr(VI) analysis in PT Batang Alum Industrie samples, and determine the concentration of Cr(VI) in PT Batang Alum Industrie samples.

The analyzed samples from PT Batang Alum Industrie include alum hijau and asam elisa samples. The pH and complex stability time were varied for optimization purposes. The Cr(VI) solution was adjusted to the optimum pH and then analyzed using the complexing agent 1,5-diphenylcarbazide (DPC). The reddish-purple colored complex compound can be measured at a wavelength of 541.2 nm. The Cr(VI) solution was measured after reaching the optimum stability time. Validation parameters such as linearity, limit of detection (LOD), limit of quantitation (LOQ), precision, and accuracy were determined in this study.

The results showed that the analysis of Cr(VI) can be performed at pH 1.5 with a complex stability time of 16-20 minutes. The developed UV-Vis spectrophotometric method for Cr(VI) analysis in PT Batang Alum Industrie samples showed good validity with a linearity parameter of 0.999956, LOD of ,.0256 ppm, LOQ of 0.0853 ppm, %RSD repeatability of 0.2810%, %RSD intra- day precision of 0.0723%, %RSD inter-day precision of 0.2593%, and accuracy of 99.60%. The concentration of Cr(VI) in the alum hijau samples varied with voltage and time as follows: 246.33; 346.65; 3,991.30; 4,097.82; and 5,046.81 ppm, as well as 3,913.83; 14,457.99; 18,516.08; 18,258.28; and 16,074.65 ppm. The concentration of Cr(VI) in the asam elisa samples varied with voltage and time as follows: 767.08, 31.29, 353.41, 158.32, and 21.15ppm, as well as 13.57, -27.62, -30.37, -29.72, and -39.11ppm.

Kata Kunci: *chromium(III), chromium(VI), validation, green alum*