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Solid phase extraction of copper, nickel, and cobalt in water samples after extraction using surfactant coated alumina modified with indane-1,2,3-trione 1,2-dioxime and determination by flame atomic absorption spectrometry

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Abstract: A simple method for simultaneous pre-concentration of Cu, Ni, and Co metal ions prior to their determination by flame atomic absorption spectrometry is reported. The method is based on the extraction of target ions via complexation with indane-1,2,3-trione 1,2-dioxime immobilized on sodium dodecyl sulfate (SDS) coated alumina. The metal content on the adsorbent was eluted with 4.5 mL of 2 mol L⁻¹ nitric acid. The influences of the analytical parameters including pH, sample volume and flow rate, and eluent type and flow rate were investigated. The effect of matrix ions on the retentions of the analytes was also examined. The recoveries of analytes were generally higher than 96% with a low relative standard deviation (R.S.D. < 3%). The presented method was successfully applied for determination of these metals in water samples.

Key Words: Solid phase extraction; surfactant coated alumina; atomic absorption spectrometry; indane-1,2,3-trione 1,2-dioxime

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