Solid-phase extraction of copper and zinc in water samples using diethylamine-modified phosphorus-containing polymer

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Diethylamine-modified phosphorus-containing polymer has been used as adsorbent for the preconcentration of traces amounts of Cu(II) and Zn(II). 4-(2-thiazolylazo) resorcinol was used as a chelating agent. The analytes were determined by FAAS. Various parameters such as: pH, volume of ligand, volume of elution, and eluent concentration affecting on the extraction efficiency of the polymer has been evaluated by Placket–Burman design to explore the important variables. Further were optimized by central 2^3+ star orthogonal composite design. The limits of detection for Cu(II) and Zn(II) were 2.1 and 6.3 μg/L, respectively. The accuracy of proposed method was checked by the analysis of TMDA 64.2 certified reference material. The method was applied to determine Cu and Zn in natural water samples.

Keywords: Solid-phase extraction; Preconcentration; Copper; Zinc; Multivariate study