

## Carrier Element-free Coprecipitation with 3-(4-Tert-Butylphenyl)-5-Phenyl-4-(2-Hydroxy-4-Methoxybenzylamino)-4H-1,2,4-Triazole for Separation/Preconcentration of Pb(II) and Cd(II) from Various Matrix

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The detection of heavy metal ions in environmental sources such as natural water and food is a great concern in analytical chemistry due to their toxicity for living organism [1]. For these reasons, the determination of elements in water and food samples are very significant. The precise determination of heavy elements is needed improved analytical techniques. Recently, the carrier element free coprecipitation (CEFC) method has been developed for separation and preconcentration of metal ions. The CEFC method has many advantages for preconcentration of trace metals such that in this method the contamination and adsorption risks for the interested analyte ions from a carrier element can be eliminated [2]. In this work, a simple, rapid and sensitive separation/pre-concentration method for Pb(II) and Cd(II) in environmental samples has been developed. The present procedure is based on a combination of carrier element-free coprecipitation (CEFC) and flame atomic absorption spectrometric (FAAS) determination of trace metals ions. An organic coprecipitant, 3-(4-*tert*-butylphenyl)-5-phenyl-4-(2-hydroxy-4-methoxybenzylamino)-4H-1,2,4-triazole was used without adding any carrier element for coprecipitation of metal ions. The optimum conditions for the coprecipitation process were investigated on several commonly tested experimental parameters, such as pH of the solution, amount of ligand, sample volume, standing time, centrifugation rate and time. The influences of some anions, cations and transition metals on the recoveries of analyte ions were also investigated, and no considerable interference was observed. The pre-concentration factor was found to be 50 and the detection limits corresponding to three times the standard deviation of the blank (N = 10) for Pb(II), Cd(II), ions were found as 2,0 and 0,2  $\mu\text{g L}^{-1}$ , respectively. The relative standard deviations were found to be lower than % 6,0 for both analyte ions. The present procedure was successfully applied for separation and pre-concentration of investigated ions in sea water and stream water as liquid samples and tobacco, black tea as solid samples. In order to support the accuracy of the method, the certified reference materials (CRM-SA-C Sandy Soil C) were analyzed. The experimental results are in good agreement with the certified values.

**KEYWORDS:** separation and preconcentration, FAAS, coprecipitation, carrier element free coprecipitation

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