



Thiazolidinone Steroids Impregnated Polyurethane Foams as a Solid Phase Extractant for the Extraction and Preconcentration of Cadmium(II) from Industrial Wastewater

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Abstract: Two new thiazolidinone steroids namely sulfadiazino-imino- steroid (**I**) and 3-sulfonamoyl-phenyl-spiro[4-oxo-thiazolidin-2, 2`steroid] (**II**) were prepared and characterized from their molecular weight determination and spectroscopic measurements. Compound **II** were physically immobilized onto polyurethane foams (PUFs) for the preconcentration of cadmium(II) from acidic aqueous media containing iodide ions. The kinetics of the retention step of cadmium(II) from aqueous solutions by compound **II** treated PUFs was studied. Particle diffusion was the most probable operating mechanism and did not control the kinetics of cadmium(II) retention by compound **II** immobilized PUFs. A preconcentration / separation procedure is presented for the solid phase extraction of trace cadmium(II) from aqueous media as its ternary complex ion associate with compound **II** in industrial wastewater samples onto compound **II** treated PUFs prior to determination by flame atomic absorption spectrometry (FAAS). Compound **II** treated PUFs sorbent was successfully packed in glass column for complete extraction and / or determination of trace concentrations of cadmium(II) in wastewater samples with satisfactory recovery (95 ±2.6). The cyclic voltammetry of compound **II** showed two well defined irreversible redox couples and suggested its possible use as complexing agent in stripping voltammetric determination of trace concentrations of toxic metal ions in wastewater.

Keywords: Cadmium(II), Thiazolidinone steroids, Removal, Determination, Polyurethane foam sorbent, Wastewater.