

Solid Phase Extraction of Zn as Xylenol Orange Complex on Naphthalene Adsorbent and its Determination by Flame Atomic Absorption Spectrometry

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A solid-phase extraction method for determination of zinc by FAAS has been described. The proposed procedure was based on adsorption of zinc–xylenol orange complex on naphthalene–methyltriocetyl ammonium chloride adsorbent on a column. The adsorbed metal complex was eluted from the column with nitric acid solution and determined by FAAS. Adsorption conditions including pH, reagent concentration, sample volume, flow rate, and concentration of interfering ions were investigated. Calibration plot was linear in 1–50 ng mL⁻¹ concentration range of Zn in the initial solution, $r = 0.9999$. Limit of detection was calculated based on $3S_0$ criterion and equaled 0.60 ng mL⁻¹ when 100 mL-in-volume samples were used, and 0.06 ng mL⁻¹ in case of 1000 mL-in-volume samples. Relative standard deviation for ten replicate determinations of 5 and 20 ng mL⁻¹ Zn was 3.8 and 1.1%, respectively. The proposed method was applied to determination of zinc in mineral and tap water samples, as well as in sodium sulfite salt from Merck.