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Title: Investigation of 3-amino-1,2,4-triazole azodye derivatives as reagesnts for determination of mercury (II)

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Abstract:

The reaction of mercury(II) with 3-(2,4-dihydroxyphen-1-ylazo)-1,2,4-triazole (HL1), 3-(2-hydroxy-5-methylphen-1-yalzo)-1, 2, 4-triazole (HL^2) , 3- (2-hydroxy-5-ethoxycarbonylphene-1-ylazo)-1,2,4-triazole (HL^3) , 3-(2-hydroxy-5-acetylphen-1-ylazo)-1,2,4-triazole (HL^4) , 3-(2-hydroxy-5-formylphen-1-ylazo)-1,2,4-triazole (HL^5) , and 3-(2-hydroxy-5-bromophen-1-ylazo)-1,2,4-triazole (HL^6) was studied. A new, direct, and simple procedure was suggested for the spectrophotometric determination of mercury (II) based on its complexation reaction with HL^1-HL^6. The best reagent was found to be HL^3 due to its high sensitivity and selectivity. In aqueous media of ph 9.0 containing 40 vol. % of methanol, Hg(II) reacts with HL^3 to form a 1:2 (Hg(II) .HL^3) complex having a sensitive absorption peak at 490 nm with the molar extinction coefficient of 3.31 x 104 L mol^{-1} cm^{-1} using 4 $x10^{-4}$ M of the reagent. Beer's law is obeyed over the range from 0.00 ug mL^{-1} to 12.04 ug mL^{-1} of mercury(II). The proposed method was applied in the determination of mercury(II) in tap water, seawater and synthetic seawater samples, without the need of prior treatment, with satisfactory results.

Key words:

Azo-triazole, spectrophotometric determination, mercury(II)