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The formation constants determination of α- formyl acetylacetonate complex by pH-metric titration

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The copper (II) ion forms complexes with a great variety of stereochemical conformations. The stereochemistry of the copper (II) complexes appears to modulate the biological activity of the metal ion involved in many biological processes [1]. Pivetta et al. [2] determined the formation constants of $[Cu(phen)_2(L)]$ $(ClO_4)_2$ complexes in nonaqueous media by spectrophotometric measurements. In another work [3] the formation constants of two copper (II) systems were reported by the simultaneous analysis of multi-component isotropic spectra.

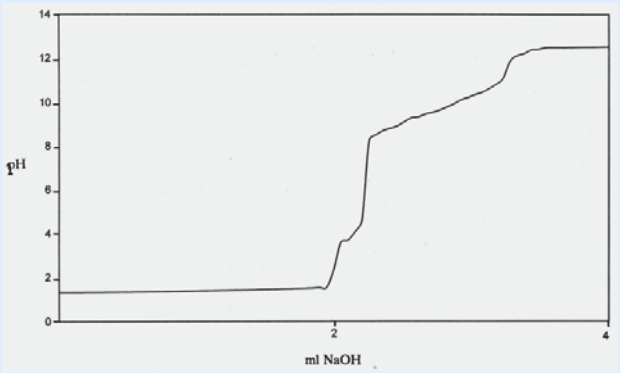

Fig.1: Titration curve of Cu(α- CHOacac)$_2$ by NaOH, 1.025M.

The aim of this work is to determine the formation constant of α-formyl acetylacetonate [Cu(α- CHOacac)$_2$] by pH-metric titration. Cu(α- CHOacac)$_2$ was synthesized by adding $POCl_3$ to a solution of copper (II) acetylacetonate (Cu(acac)$_2$) and dry dimethylformamide. Two Formation constants for [Cu(α-CHOacac)$_2$], K_{f1} and K_{f2}, were obtained which are 3.09×10^9 and 5.98×10^8, respectively. For comparison, log K_{f1} and log K_{f2} for Cu(acac)$_2$ were reported as 12.46 and 11.20, respectively [4].

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A modified N,N'-[1,1'-Dithiobis(phenyl)] bis(salicylaldimine) self assembly gold electrode as a sensor for study and electrochemical determination of Epinephrine (EP) in pharmaceutical formulations

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Development of new methods for determination of catecholamines such as EP has received considerable interests in recent years. Various methods, such as luminescence [1], spectroscopy [2], titration [3], HPLC [4], and voltammetry have been developed for this purpose. However, a major problem in the electrochemical detection of EP is the coexistence of ascorbic acid (AA) and uric acid (UA) in relatively high concentrations. In this work, we fabricated an Au N,N'-[1,1'-Dithiobis(phenyl)] bis(salicylaldimine) self assembled monolayer modified electrode (Au DTPS SAM-ME) and reportd its applications for EP sensing in the presence of high concentration of AA and UA.

The characterization of Au DTPS SAM-ME was investigated by cyclic voltammetry and ac impedance using the $[Fe(CN)_6]^{3-/4-}$ redox couple. Selective detection was realized in eliminating AA and UA, different from the methods on the potential separation. A calibration curve was obtained for EP in a linear range of 3.0×10^{-6} to 1.5×10^{-4} mol L^{-1}. The detection limit for EP was found to be 5.0×10^{-8} mol L^{-1}. The modified electrode showed good selectivity, stability and anti-fouling properties. The results indicated that the Au DTPS SAM-ME could be employed for the determination of EP in pharmaceutical formulations and plasma samples.

Keywords: Self assembled monolayers, Epinephrine, electrocatalytic activity, pharmaceutical formulations

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A New PNA Biosensor for Detection of p53 DNA Plasmid by nano gold modified Screen Printed Electrode

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Sequence-specific detection of DNA targets has become increasingly important in molecular diagnostics. In these years, electrochemical DNA biosensors are