Electrocatalytic Oxidation of L-cysteine by Adamantane Ester Schiff Base Nickel Complexes

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A p-aldehyde benzoic acid adamantane ester (D1), 4-formyl benzoic acid adamantane ester shrinking o-aminophenol Schiff base (D2) and its nickel complexes (D3) were synthesized and characterized by thermogravimetric analysis, ¹H-NMR and UV-Vis spectrum. A glassy carbon electrode was chemically modified by adamantane esters Schiff base nickel complexes which was employed for determination of L-cysteine. The influences of the effective parameters such as the pH of supporting electrolyte, scanning rate and the time of maceration adsorption were investigated. The electrochemical responses to L-cysteine have a good linearity in the range of 0.01 and 0.08 mmol/L with the detection limit of 5.0 μmol/L. The recovery rate was between 97.88% and 101.96% with the relative standard deviation of 3.9%. Therefore, a new detection method for the L-cysteine content had been established in food based on Schiff base nickel complexes.

Keywords: Schiff base complexes; synthesize; modified electrode; L-cysteine

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