Electrochemical Sensor for Determination of *L*-Cysteine Based on Carbon Electrodes Modified with Ru(III) Schiff Base Complex, Carbon Nanotubes and Nafion

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A new low potential electrochemical sensor for determination of *L*-cysteine based on carbon electrodes modified with Ru(III) Schiff base complex, multi-walled carbon nanotubes and Nafion is presented. Cyclic voltammetry, differential pulse voltammetry and flow injection analysis were employed. Measurements were carried out using Britton-Robinson buffer (pH 5.50). The results showed that addition of multi-walled carbon nanotubes to Ru(III) complex modified glassy carbon and screen printed carbon electrodes gives increased current signals at the potential where oxidation of *L*-cysteine occurs. Flow injection amperometric measurements were performed at the operating potential +0.15 V vs. Ag/AgCl (3 M KCl) electrode and showed fast electric current response for *L*-cysteine oxidation, demonstrating good reproducibility and stability. The sensor has a detection limit of 0.11 mg L⁻¹ and a dynamic range of 50-500 mg L⁻¹. The repeatability was calculated as 2.8 %. New sensor was used for the determination of *L*-cysteine in pharmaceutical products.

Keywords: *L*-Cysteine, Ru(III) Schiff base complex, multi-wall carbon nanotubes, modified glassy carbon and screen printed carbon electrodes, voltammetric and amperometric determination

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