عنوان مقاله:

Highly Sensitive Voltammetric Determination of Acetaminophen by an Overoxidized Poly (p-aminophenol) Modified Glassy Carbon Electrode

محل انتشار:

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خلاصه مقاله:

This study aims to develop a promising electrochemical sensor based on polymer film overoxidation following the electrochemical polymerization of p-aminophenol on a bare glassy carbon electrode (GCE) surface for the voltammetric determination of acetaminophen (ACP). Cyclic voltammetry (CV) and scanning electron microscopy (SEM) were employed to characterize the electroanalytical performance and morphology of the modified electrode. The results indicated a significant improvement in electrode sensitivity to ACP after electrochemical polymerization and overoxidation of poly(p-aminophenol). We also investigated the effect of all effective instrumental and experimental parameters on sensor response. The electrode SWV response to ACP within the range ۰.۰۷-۱۰۰.۰ µmol L-۱ with a limit of detection (LOD) of ۰.۰۲۱ µmol L-۱ was linear under optimized conditions. We also attempted to evaluate the designed sensor selectivity to different interfering species, suggesting no significant interference. The designed sensor was also used to determine ACP in different pharmaceutical preparations and biologic samples with minimal matrix effects, admissible recoveries (۹۹-۱۰۶), and satisfactory repeatability (۱.۰-۵.۳ %RSD). The proposed sensor exhibited admissible repeatability, reproducibility, and stability.

کلمات کلیدی:

Acetaminophen, square wave voltammetry, Poly ۴-Aminophenol, Electrochemical sensor