عنوان مقاله:

Voltammetric study of the influence of supporting electrolytes on the electrochemical behavior of tamoxifen as breast anticancer drug in aqueous medium and it’s extraction from tablets

محل انتشار:

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نویسندگان:

Z Deris Falahiye - *Department of Chemistry, Faculty of Science, Islamic Azad University, Arak Branch*

M Jalali - *Department of Chemistry, Faculty of Science, Islamic Azad University,Omidiyeh Branch*

M Alimoradi - *Department of Chemistry, Faculty of Science, Islamic Azad University, Arak Branch*

خلاصه مقاله:

In this work, the electrochemical behavior of tamoxifen as an anti cancer drug were investigated at a glassy carbon electrode (GCE) in Britton-Robinson (BR) buffer at different pH as well as in H2SO4. H2SO4 was the best supporting electrolyte in this work. Cyclic voltammetry (CV) and chronoamperometry were used to understand the electrochemical characteristics of tamoxifen (Tam). Based on the results of the recorded CV, the electrodeposition and anodic striping behavior of the Tam were investigated at the surface of GCE. To find the best conditions for taking a sharp analytical peak concerning the electro-oxidation of Tam, differential pulse anodic adsorptive striping voltammetry (DPAASV) was studied. The primary experiments demonstrated that the DPAASV presents a sufficient oxidation peak current at approximately 1.03 V vs Ag/AgCl. Therefore, the effects of different parameters such as deposition potential, deposition time and concentration of H2SO4 have been studied and optimized. The obtained results shown that the -1.4 V, 30s and H2SO4 0.5 M are the optimal values, respectively. Then the calibration curve was plotted in the range of 0.5 to 80 µM and the limits of detection (LOD) and quantitation (LOQ) were calculated to be 0.12 and 0.4 µM, respectively. The mean, standard error and relative standard deviation (RSD) for 4 replicates of 15 µM were found to be 15.57 µM, 3% and 4%, respectively. To estimate the application potential of the proposed method, the extraction of Tam from tablets containing 20 mg Tam were investigated and optimized. Finally, the proposed method was successfully employed for determination of Tam in spiked physiological samples.

کلمات کلیدی:

Tamoxifen; DPAASV; Striping voltammetry; deposition