

عنوان مقاله:

Electrochemical Sensing of Thioridazine in Human Serum Samples Using Modified Glassy Carbon Electrode

محل انتشار:

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خلاصه مقاله:

In this work, thioridazine (TR) as an important neuroleptic drug has been detected simply by an electrochemical approach using a glassy carbon electrode modified by nickel oxide nanoparticles decorated graphene quantum dot (NiO/GQD/GCE). The bare and modified electrodes were characterized using the scanning electron microscope (SEM) and electrochemical techniques. The cyclic voltammetric studies demonstrated that the NiO/GQD/GCE has remarkably enhanced electro-catalytic activity towards the oxidation of TR in neutral solutions. The results (significant increase in peak current and a negative shift in TR oxidation potential) are related to the increase in electrode surface area and electron transfer rate along with the modifier catalytic role. The NiO/GQD modified electrode used for sensitive determination of TR by differential pulse voltammetry (DPV) method. The effect of experimental parameters on the obtained results was studied and optimized. The NiO/GQD/GCE modified electrode revealed a linear response in the concentration range from 2×10^{-9} to 200×10^{-9} M with a limit of detection (LOD) equal to 0.05×10^{-9} M (S/N=3). The sensor was applied to determine TR in serum and pharmaceutical samples, which proves this sensor is an ideal device for TR determination.

کلمات کلیدی:

Thioridazine, Graphene quantum dot, Electrochemical sensor, Drug analysis, NiO nanoparticles

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