13th International Conference and Exhibition on Nanomedicine and Pharmaceutical Nanotechnology

July 24-25, 2017 | Rome, Italy

Synthesis and electrocatalytic properties of anatase TiO_2 nanosheet hierarchical spheres, Pt nanoparticles and 2,3-dihydro-2-(3,4-dihydroxyphenyl)quinazolin-4(1H)-one for determination of phenobarbital in presence of isoprenaline

Ali Asghar Abdollahzadeh Iran

In this study for the first time the catalytic activity of isoprenaline (IP) in presence of phenobarbital (PB) was studied at the surface of a novel carbon paste biosensor based on anatase TiO_2 nanosheet hierarchical spheres (TiO_2 NSHSs), Pt nanoparticles (PtNPs) and 2,3-dihydro-2-(3,4-dihydroxyphenyl) quinazolin-4(1H)-one (DPQ). DPQ-PtNPs-TiO_2NSHSs/CPE as high sensitive sensors showed an excellent character for electrocatalytic oxidization of isoprenaline and phenobarbital. The constructed PtNPs-TiO_2NSHSs/CPE was characterized by different methods including a scanning electron microscope (SEM), electrochemical impedance spectroscopy (EIS) and voltammetry. Furthermore, to improve electrocatalytic activity and charge injection, DPQ was added and the electrocatalytic activity of DPQ-PtNPs-TiO_2NSHSs/CPE was investigated by the simultaneous determination of IP and PB using differential pulse voltammetry (DPV). The differential pulse voltammetry data showed that the obtained anodic peak currents were linearly dependent on the IP and PB concentrations in the range of 5.0–300.0 μ M and 8.0–350.0 respectively. Also, the plot of peak versus IP concentration yielded two calibration plots corresponding to two concentration ranges of 0.05-20.0 μ M and 20.0-900.0 μ M respectively and the detection limit was obtained as 7 nM. Finally, the modified sensor was successfully used for the determination of the analytes in real samples with satisfactory results.



Biography

TEM image of the particles at a magnification of 500 nm

AliAsghar Abdollahzadeh has his expertise in evaluation and passion in improving the health and wellbeing. His open and contextual evaluation model based on nanorobot and nanoparticle creates new pathways for improving cancer/HIV treatment and epilepsy treatment. He has built this model after years of experience in research, and evaluation. He innovates novel drug for definitively HIV/cancer treatment by nanorobot based on machine learning methods. He designs the synthesis and electrocatalytic properties of anatase TiO2 nanosheet hierarchical spheres.

abdollahzadeh.aliasghar@srbiau.ac.ir

Notes: