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Abstract

Herein, we report a one-pot synthesis of structurally uniform and electrochemically active graphitic carbon nitride/nickel oxide (g-C_3N_4/NiO) nanocomposite and an investigation on the electrocatalytic oxidation of quercetin (QR). The synthesized g-C_3N_4/NiO nanocomposite has uniform surface distribution, which was characterized with scanning electron microscopy (SEM). Moreover, the composition of synthesized g-C_3N_4/NiO nanocomposite was characterized by UV-vis-spectroscopy, X-ray diffraction (XRD), fourier transform infrared spectroscopy (FT-IR spectra), BET, SEM and HRTEM. The g-C_3N_4/NiO was electrochemically treated in 0.1MPBS solution through cyclic voltammetry (CV) and differential pulse voltammetry (DPV). The peak current response increases linearly with QR concentration from 0.010µM to 250 µM with a fast response time of less than 2s and a detection limit of 0.002µM. To further evaluate the feasibility of using this sensor for real sample analysis, QR content in various real samples including green tea, green apple, honey suckle were determined and satisfactory results were achieved.

Keywords: Synthesis, Nanocomposite. Quercetin, Electrocatalytic activity, Real samples