

Abstract

The present study describes a simple sensor developed from Fe₃O₄ and MWCNT nanoparticles for the simultaneous detection of sulfamethoxazole (SMX) and trimethoprim (TMP). Determination was carried out using cyclic voltammetry, electrochemical impedance spectroscopy, chronoamperometry and differential pulse voltammetry. Oxidation peaks were obtained at 910 mV (SMX) and 1120 mV (TMP) in Britton–Robinson buffer (pH 6.0). LODs of 1.10×10^{-8} M (SMX; $2.79 \mu\text{g L}^{-1}$) and 2.10×10^{-8} M (TMP; $6.10 \mu\text{g L}^{-1}$) were obtained. The Fe₃O₄/MWCNT/GCE showed good stability and selectivity. Furthermore, the simultaneous detection of SMX and TMP in tablets, urine and water was possible using the standard addition method.