

Electrocatalytic oxidation of paracetamol mediated by lithium doped microparticles Bi₂O₃/MWCNT modified electrode.

ABSTRACT

Use of a lithium doped bismuth oxide and multi-walled carbon nanotubes modified glassy carbon electrode (Bi₂O₃/Li⁺ /CNT/GC) enhanced the oxidation current of paracetamol during cyclic voltammetry compared to bare glassy carbon electrode and (Bi₂O₃ /Li⁺ /CNT) modified electrode. Peak potential was observed to shift slightly to less positive value by about 220 mV and current was significantly enhanced by about 3.2 folds. The sensitivity under conditions of cyclic voltammetry is significantly dependent on pH, temperature and scan rate. Calibration plot reveals linearity from the range 5.0×10^{-7} – 2×10^{-3} M with a correlation coefficient of 0.998. The detection limit was estimated to be 7.4×10^{-7} M. Practically; Bi₂O₃ /CNT modified electrode could be used for the determination of paracetamol in tablet samples.

Keyword: Electrocatalysis; Bi₂O₃ /MWCNT composite; Modified GCE; paracetamol; Cyclic Voltammetry.