Voltammetric Determination of Nifedipine on Carbon Nanotubes-Modified Glassy Carbon Electrode: A new Application to Dissolution Test Studies

Jara-Ulloa,

Salgado-Figueroa,

Yañez,

Núñez-Vergara,

Squella,

We report the adsorptive voltammetric determination of nifedipine on multiwalled carbon nanotubes (MWCNT)-modified glassy carbon electrode (GCE). Nifedipine was adsorbed on the MWCNT and then reduced using linear sweep and cyclic voltammetry (LSV and CV). Parameters such as pH and accumulation time were tested. The MWCNT-modified GCE showed enhanced currents and good signal-to-noise characteristics in comparison with the bare GCE. Consecutive measurements with the modified electrode were highly repeatable and reproducible. The MWCNT/GCE was used for the determination of nifedipine and is recommended for quantitation in dissolution test studies. In this study we have tested normal and extended-release pharmaceutical formulations of nifedipine using USP apparatus 2 and tracking the released drug in solution by the proposed voltammetric method. The main advantage of the voltammetric determination is the feasibility to detect the drug in-situ avoiding tedious intermediate steps such as fil