Electrochemical Determination of Methyldopa by Graphene Quantum Dot / 1-butyl-3-methylimidazolium hexafluoro phosphate Nanocomposite Electrode

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Methyldopa is one the important catecholamines used for treatment of high blood pressure. In this study, a nanocomposite electrode was made using graphene quantum dots (GQD) and 1-butyl-3-methylimidazolium hexafluorophosphate (1B3MIPF₆) in a carbon paste matrix (GQD/1B3MIPF₆/CPE). The used GQD was synthesized and characterized using transmission electron microscopy (TEM). The electro-oxidation behavior of Methyldopa was investigated on the surface of GQD/1B3MIPF₆/CPE and finally it was used as a working electrode for the electrochemical determination of Methyldopa in some pharmaceutical and biological samples. The results showed an improvement of ~3.2 times in electro-oxidation peak of methyldopa in a dynamic linear range of 0.04-750.0 μM (limit of detection 0.01 μM).

Keywords: Graphene quantum dots, Methyldopa, Carbon paste electrode, Voltammetry

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