Sensitive Voltammetric Analysis of Cetirizine Using Electrochemical Sensor Based on Poly (methyl orange) Modified Carbon Nanotube Paste Electrode

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Poly (methyl orange) was demonstrated as an effective polymer for the modification of electrode surface for the electrochemical investigation of various drug molecules. An efficient detection of cetirizine (CTZ), a renowned antihistamine drug is of great importance. Systematic analysis of CTZ was done through cyclic voltammetry (CV) method in phosphate buffer saline with pH 7.0 at 0.1 V/s scan rate. The developed poly(methyl orange) modified carbon nanotube electrode (PMO/CNTPE) was highly conductive and it was demonstrated through CV and electrochemical impedance spectroscopy methods. Under best possible investigational circumstances, the developed non-enzymatic sensing device was proficient to detect CTZ with a broad concentration range (2 μM to 45 μM) and produced lower limit of detection (0.076 μM). Additionally, the designed electrochemical sensor exhibited superior stability along with excellent repeatability and reproducibility showcasing its efficient sensing ability. The fabricated sensing device was inspected to check its applicability in the analysis of medicinal formulations with acceptable recovery.

Keywords: Cetirizine, poly(methyl orange), multi walled carbon nanotubes, tablet sample analysis

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