Simultaneous Electrochemical Determination of Dopamine, Uric acid, Tryptophan on Electropolymerized Aminothiazole and Gold nanoparticles Modified Carbon nanotubes Modified Electrode

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In the present work, a multifunctional biosensor was developed for the simultaneous determination of dopamine (DA), uric acid (UA) and tryptophan (Try) using 2-amino-thiazole (AT)/gold nanoparticles (AuNPs) functionalized multiwalled carbon nanotubes (*f*-MWCNT) modified electrode. The *f*-MWCNT/AuNPs-AT composite modified glassy carbon electrode (GCE) was prepared by electrodeposition of AT and followed by electrodeposition of AuNPs and drop casting of *f*-MWCNT on GCE. The formation of the composite was confirmed by atomic force microscopy, scanning electron microscopy and electrochemical studies. The *f*-MWCNT/AuNPs-AT modified GCE exhibits good electrocatalytic ability for the simultaneous determination of DA, UA and Try. Cyclic voltammetry and linear sweep voltammetry were used for simultaneous and selective determination of DA, UA and Try. Moreover, the modified electrode also provides good sensitivity and selectivity for the determination of DA, UA and Try.

Keywords: Dopamine, uric acid, tryptophan, carbon nanotubes, gold nanoparticles, electrocatalysis, multifunctional biosensor.

1. INTRODUCTION

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