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**Simultaneous determination of dopamine and paracetamol using carbon nanotubes/graphene oxide nanocomposite capped gold nanoparticles modified Au electrode**

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**Abstract:** Dopamine (DA) is one of the main neurotransmitters which plays important roles in the control of central nervous, renal, cardiovascular and hormonal systems. It is also involved in the drug addiction and some neurological diseases such as Parkinson, Alzheimer and Schizophrenia [1,2]. Paracetamol (PA) is an effective antipyretic and analgesic drug in the word. It is widely used for the relief of pain associated with arthralgia, neuralgia, cephalagra, cancer pain, headache, backache and postoperative pain [3]. Therefore, development of a simple, fast, and sensitive analytical method for determination of dopamine and paracetamol in biological fluids is very important. In the present study, a new electrochemical sensor was developed for the simultaneous voltammetric determination of DA and PA based on a gold electrode modified with carbon nanotubes /graphene oxide (GO /CNT) nanocomposite and gold nanoparticles (AuNPs). The modified electrode showed an excellent electrocatalytic activity for the oxidation of PA and DA. The fabrication process of the proposed sensor was evaluated by scanning electron microscopy (SEM), cyclic voltammetry and electrochemical impedance spectroscopy. Several important parameters controlling the performance of the sensor were investigated and optimized. The developed sensor also showed a high selectivity for dopamin and paracetamol in the presence of interfering species. Moreover, the proposed electrode revealed good reproducibility, repeatability and stability. Finally, it was successfully applied for determination of dopamine and paracetamol in real samples.

**Keywords**: Dopamine; Paracetamol; carbon nanotubes; graphene oxide; gold nanoparticles

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