

عنوان مقاله:

Voltammetric determination of levodopa, acetaminophen and tyrosine using a carbon paste electrode modified with graphene and modifier

محل انتشار:

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خلاصه مقاله:

Parkinson's disease (PD) is believed to be related to low levels of dopamine in certain parts of the brain. Levodopa (LD) is considered the most effective treatment available for Parkinson's disease. Paracetamol or acetaminophen (AC) is a widely used over-the-counter analgesic (pain reliever) and antipyretic (fever reducer). It is commonly used for the relief of fever, headaches, and other minor aches and pains, and is a major ingredient in numerous cold and flu remedies [1]. L-Tyrosine is an important amino acid which is considered nonessential because the human body can make it from another amino acid called phenylalanine. In the human body, L-Tyrosine is used to make catecholamines. L-Tyrosine plays a crucial role in biological systems as it is a predecessor of hormones as well as of neurotransmitters such as thyroxin and dopamine respectively, in addition to other physiologically essential biomolecules [2]. The chemical modification of inert substrate electrodes with mediators offers significant advantages in the design and development of electrochemical sensors. In operations, the redox active sites shuttle electrons between a solution of the analyte and the substrate electrodes often along with a significant reduction of the activation overpotential. A further advantage of chemically modified electrodes is that they are less prone to surface fouling and oxide formation compared to inert substrate electrodes [1]. In the present work, a novel carbon paste electrode modified with graphene oxide nanosheets and a novel ferrocene derivative was fabricated. The electrochemical study of the modified electrode, as well as its efficiency for voltammetric oxidation of levodopa, is described. It has been found that under optimum condition (pH 7.0) in cyclic voltammetry, the oxidation of levodopa occurs at a potential about 250 mV less positive than that of an unmodified carbon paste electrode. The prepared modified electrode exhibits a very good resolution between the voltammetric peaks of levodopa, acetaminophen and L-tyrosine which makes it suitable for the detection of levodopa in the presence of acetaminophen and L-tyrosine in real samples

کلمات کلیدی:

Levodopa, Acetaminophen, L-Tyrosine, Graphene, Modified electrode

لینک ثابت مقاله در پایگاه سیویلیکا:

