Voltammetric Determination of Bisphenol A in the Presence of Uric Acid Using a Zn/Al-LDH-QM Modified MWCNT Paste Electrode

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A multiwalled carbon nanotube paste electrode (MWCNTPE) modified with zinc aluminium layered double hydroxide-quinmerac (Zn/Al-LDH-QM) was fabricated for simultaneous determination of uric acid and bisphenol A. This modified electrode was characterized by scanning electron microscope (SEM), transmission electron microscope (TEM), and electrochemical methods. Several experimental conditions such as percent of modifier, pH of the solution, and square wave voltammetry parameters were optimized. The effective surface area of the electrode were determined by chronocoulometry. There was several linear range where the sensor performs well which are within the concentration 0.3 – 30.0 μM and 50.0 – 100.0 μM for uric acid, and 0.3 – 50.0 μM and 10.0 – 100.0 μM for bisphenol A. The detection limit for both organics were 0.065 μM and 0.049 μM , respectively. The modified MWCNTPE was also tested for the determination of uric acid and bisphenol A in real samples and achieved high recoveries percentage from 98.0% to 108.3 %.

Keywords: Layered double hydroxide, Modified electrode, Bisphenol A, Uric acid

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