

Determination of Bisphenol A and Uric Acid by Modified Single-Walled Carbon Nanotube with Magnesium Layered Hydroxide 3-(4-Methoxyphenyl)Propionic Acid Nanocomposite

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Abstract : A single-walled carbon nanotube (SWCNT) that has been modified with magnesium layered hydroxide 3-(4-methoxyphenyl)propionic acid nanocomposite was proposed for the determination of uric acid and bisphenol A by square wave voltammetry. The results obtained denote that MLH-MPP nanocomposites enhance the sensitivity of the voltammetry detection responses. The best performance is shown by the modified carbon nanotube paste electrode (CNTPE) with the composition of single-walled carbon nanotube: magnesium layered hydroxide 3-(4-methoxyphenyl)propionic acid nanocomposite at 100:15 (% w/w). The linear range where the sensor works well is within the concentration 1.0×10^{-7} - 1.0×10^{-4} and 3.0×10^{-7} - 1.0×10^{-4} for uric acid and bisphenol A respectively with the limit of detection of 1.0×10^{-7} M for both organics. The interferences of uric acid and bisphenol A with other organic were studied and most of them did not interfere. The results shown for each experimental parameter on the proposed CNTPE showed that it has high sensitivity, good selectivity, repeatability and reproducibility. Therefore, the modified CNTPE can be used for the determination of uric acid and bisphenol A in real samples such as blood, plastic bottles and foods.

Keywords : bisphenol A, magnesium layered hydroxide 3-(4-methoxyphenyl)propionic acid nanocomposite, Nanocomposite, uric acid

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