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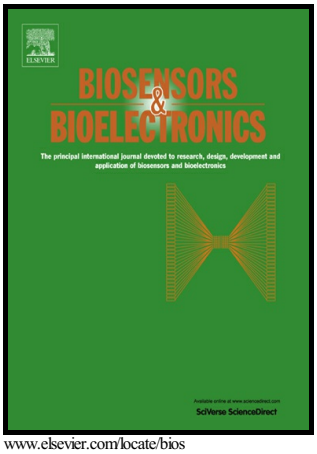

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Molecularly Imprinted Electrochemical Sensor based on Bioinspired Au Microflowers for ultra-trace Cholesterol assay

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Abstract

A novel imprinted sensor for ultra-trace cholesterol (CHO) detection based on electropolymerized aminothiophenol (ATP) molecularly imprinted polymer (MIP) on a glassy carbon electrode (GCE) modified with dopamine@graphene (DGr) and bioinspired Au microflowers has been developed in this work. As the specific recognition element, the bioinspired Au microflowers were formed by Au nanoparticles (AuNPs) and wrapped by bionic polydopamine film (PDA) through electropolymerization method. These excellent biocompatible materials could capture the target CHO effectively. The morphology of the MIP modified electrode was characterized by scanning electron microscopy (SEM) and atomic force microscope (AFM). The hydrogen-bonding interaction between templates and monomers was characterized by ultraviolet spectroscopy. Under the optimal experimental conditions, the sensor's linear response range was between 10^{-18} and 10^{-13} M, with a detection limit of 3.3×10^{-19} M, which was much more sensitive than most available CHO detection methods in previously reports. Moreover, the MIP sensor exhibited high sensitivity for CHO, low