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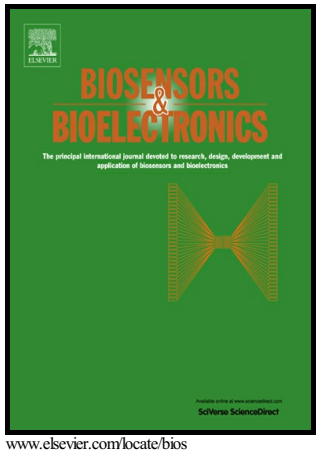

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Nonenzymatic electrochemical sensor based on Imidazole-functionalized graphene oxide for progesterone detection

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Abstract:

The modification of electrode surfaces has been the target of study for many researchers in order to improve the analytical performance of electrochemical sensors. Herein, the use of an imidazole-functionalized graphene oxide (GO-IMZ) as an artificial enzymatic active site for voltammetric determination of progesterone (P4) is described for the first time. The morphology and electrochemical performance of electrode modified with GO-IMZ were characterized by scanning electron microscopy and cyclic voltammetry, respectively. Under optimized conditions, the proposed sensor showed a synergistic effect of the GO sheets and the imidazole groups anchored on its backbone, which promoted a significant enhancement on electrochemical reduction of P4. Figures of merits such as linear dynamic response for P4 concentration ranging from 0.22 to 14.0 μmol L^{-1}, limit of detection of 68 nmol L^{-1} and limit of quantification and 210 nmol L^{-1} were found. In addition, presented a higher