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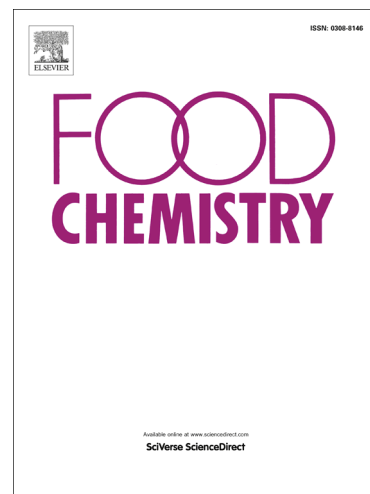
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Electrochemical Detection of Monosodium Glutamate in Foodstuffs Based on Au@MoS₂/Chitosan Modified Glassy Carbon Electrode

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Abstract

We report an amperometric immunosensor for the detection of monosodium glutamate (MSG) using a glassy carbon electrode modified with gold nanoparticle decorated on a molybdenum disulfide/chitosan (Au@MoS₂/Ch) nanocomposite. In the present detection technique, Au@MoS₂/Ch was used as a conductive matrix and anti-glutamate antibody was immobilized on to its surface *via* carbodiimide coupling method. Chemical and morphological attributes of the various components of the immunosensor were confirmed by UV-*vis* spectroscopy, SEM, TEM and XRD analysis. Electrochemical characterizations were carried out by CV, DPV and EIS. Overall results showed the effective fabrication of highly conductive Au@MoS₂/Ch nanocomposite for sensitive electrochemical detection of MSG. A linear relationship was perceived between the change in current and concentration of MSG. The relationship was found to be consistent in the detection range of 0.05-200 μ M. Statistical validation of the assay showed limit of detection and limit of quantification values as 0.03 and 0.1 μ M, respectively ($R^2=0.99$).

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