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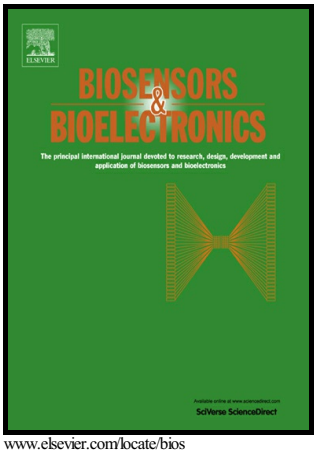

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Abstract

Methylglyoxal (MG) is a predominant precursor for advanced glycation end products (AGEs) due to its protein glycation reactions, which are the major causes of diabetic complications. MG is explored as a significant biomarker towards the prediction of diabetic complications. With this background, a non-enzymatic electrochemical biosensor has been developed to detect MG in human blood plasma samples. Microwave synthesized V_2O_5 nanoplates were used as interface material in the fabrication of modified gold (Au) working electrode for electrochemical MG biosensor. Orthorhombic crystal structured V_2O_5 with an oxidation state of +5 exhibited specific MG sensing performance. Cyclic voltammetry and amperometry studies confirmed the electrocatalytic nature of V_2O_5 nanoplates modified Au