A New Electrochemical HbA_{1c} Biosensor Based on Flow Injection and Screen-Printed Electrode

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In this paper a novel electrochemical HbA_{1c} biosensor based on flow injection and screen-printed electrode was developed. The reticulated vitreous carbon (RVC) electrode was modified with 3-aminophenylboronic acid, chitosan (CS), and tetraethoxysilica (TEOS), which entrapped carbon nanotubes to form a sol-gel film at the surface of the screen-printed electrode. The electrochemical behavior of the biosensor was investigated using cyclic voltammograms and amperometric method. Then the reusability of RVC electrode was investigated at various pH values. Furthermore, the selectivity and stability of the HbA_{1c} biosensor was studied. The biosensor was also employed to detect the real samples, and the results were compared to automatic biochemical analysis.

Keywords: HbA_{1c}; screen printed electrode; electrochemical biosensor; reusability

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