**A disposable electrochemical immunosensor for GLY detection**

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| **Abstract** Glycodelin (GLY) is a glycoprotein with a molecular weight of 47 kDa and was reported as a new and important endometrioz biomarker [1]. The levels of GLY have been found to be significantly elevated (>39 ng mL-1) in endometriosis patients compared to in healthy women (5-31 ng mL-1). GLY concentrations have been reported to be 30% higher than normal levels in stages I and II, and 40-50% higher in stages III and IV [2,3]. Therefore, sensitive detection of GLY biomarker by label-free antibody-based biosensors is of great importance for early detection of various cancers. In this study, a label-free GLY immunosensor was prepared for sensitive, low-cost and rapid detection of GLY using hand-made electrodes. First, hand-made electrodes were prepared using screen printing method. The surface of working electrode (WE) was first deposited with gold nanoparticles (AuNP) using CV method. To prepare label-free GLY immunosensors, SPCE/AuNP modified electrodes were modified with 6-mercapto hexanoic acid (6-MHA), EDC-NHS, Anti-GLY, BSA and GLY, respectively. Electrochemical characterization of the prepared GLY immunosensors were performed by CV, DPV and EIS. The preparation steps of the label-free GLY immunosensor are given in Figure 1. Optimization of experimental parameters (antibody concentration, antibody and antigen incubation times) of label-free electrochemical GLY immunosensors were performed by DPV and EIS methods. Analytical characterizations of GLY immunosensors with wide linear range and low detection limit were performed. Selectivity, regeneration and real sample studies were also carried out. The disposable GLY immunosensors developed are fast and practical candidates for use in point-of-care testing.**Figure 1.** The praperation stages of GLY immunosensor**References:** [1] Cui, J., Liu, Y., & Wang, X. (2017). The roles of glycodelin in cancer development and progression, *Frontiers in immunology*, 8, 1685.[2] Kalyani, T., Nanda, A., & Jana, S. K. (2021). Detection of a novel glycodelin biomarker using electrochemical immunosensor for endometriosis. Analytica Chimica Acta, 1146, 146-154.[3] Foster, W., Leyland, N., Wessels, J., Agarwal, S. (2019). U.S. Patent No. 10,415,093. Washington, DC: U.S. Patent and Trademark Office |

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