

STUDY OF SELF-ASSEMBLED MONOLAYERS OF THIOLS ON GOLD ELECTRODES FOR IMMUNOSENSORS

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The immobilization step of the molecule is a particularly demanding aspect in the fabrication of the immunosensors. As the immobilization procedure must maintain the biorecognition molecule close to the transducer surface, while retaining its biological activity, a reproducible manner. The use of Self-Assembled Monolayers (SAMs) can potentially provide a reproducible and robust method of fabrication immobilized antibodies layers. In this work, two methods of SAM of thiols were tested for the immobilization of immunoglobulin G (IgG) aiming their use in a piezoelectric immunosensor. The electrodes consisted of a quartz crystal wafer sandwiched by two gold contacts (0.78cm Φ). Two methods of immobilization were tested: via 3-mercaptopropionic acid (MPA) mixed to 11-Mercaptoundecanoic acid (11-MUA) and via Aminoethanethiol (AET). In the first method, the electrodes were immersed in a mixture equimolar of 3-MPA and 11-MUA (10mM), followed by incubation with *N*-hydroxysuccinimide 0,2M/ 1-ethyl-3-(3-dimethylaminopropyl) carbodiimide 0,1M (1:1). In second method, the electrodes were immersed in a solution of 25mM of AET, followed by glutaraldehyde 2.5%(v/v). After the SAM obtained, an IgG solution were incubated for 1h. Studies of concentration of immobilized antibodies, pH stability and blocking agent were carried out. As comparing the two methods, the via AET immobilization showed more sensitivity and reproducibility than the mixed via 3-MPA and 11-MUA.

Keywords: immunosensor, SAM, gold electrode

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