ABSTRACT

PRODUCTION OF KITS FOR MYOGLOBINE DIAGNOSIS

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2013, 126 pages

The aim of this study is to use MIP based immune-diagnostic systems for recognition of myoglobine and to develop surface plasmon rezonance (SPR) biosensor which could remove disadvantages of commercial diagnostic systems. SPR biosensor was prepared by modification of the gold surface of SPR nanosensor with myoglobine imprinted poly(hydroxyethylmetacrylate-N-methacryloyl-(L)-tryptophane methyl ester) poly (HEMA-MATrp) nanoparticles. In the first step, N-methacryloyl-(L)-tryptophane methyl ester (MATrp) monomer was synthesized and characterized by nücleer magnetic rezonance (NMR) and fourier transform infrared spectrophotometry (FTIR) analyses. MATrp monomer and template molecule myoglobine were precomplexed and the imprinted nanoparticles were prepared by miniemulsion polymerization. Non-imprinted nanoparticles were prepared without myoglobine for control experiments. The nanoparticles were immobilized to gold surface. Prepared SPR nanosensors were characterized with AFM, ellipsometer, FTIR, SEM and contact angle measurements. Desorption studies were performed by using 1.0 M ethylen glicol solution (20 mM pH 7.4 phosphate buffer). Nanosensors were determined with myoglobin solutions (in 20 mM pH 7,4 phosphate buffer) and in the plasma taken from a patient with myocardial infarction. Compared with the ELISA method, myoglobin concentration in the sample was determined 70 % accuracy. Myoglobin solutions with different concentrations were used to determine the adsorption kinetics. Langmuir adsorption model was found as the most suitable model for this system. In order to show the selectivity of the myoglobin imprinted nanoparticles, competitive adsorption of myoglobin, bovine serum albumin (BSA) and cytochrome *c* was investigated. The results show that the imprinted nanosensor has high selectivity and sensitivity for myoglobin.

Key Words: Molecular imprinting, nanoparticle, surface plasmon resonance, myoglobine, nanosensor, miyokard infarction.