Electrochemical immunosensor detection for lactoferrin in milk powder

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A lactoferrin (LF) immunosensor was fabricated by immobilizing an LF monoclonal antibody on a gold electrode, and the assembly process was tracked by cyclic voltammetric measurements and electrochemical impedance spectroscopy. A linear relationship between the immunosensor response current and the logarithm of the LF concentration was characterized to be in the range of 0.01-1000 ng mL⁻¹ with a LF detection limit (LOD) of 4.9 pg mL⁻¹. The fabricated LF immunosensor was specific to LF with no response to interfering substances. The optimum response occurred at an incubation temperature of 37 °C and an incubation time of 60 min. In addition, the fabricated LF immunosensor exhibited a 4-week shelf life. Application of the fabricated LF immunosensor to real milk samples was demonstrated. In conclusion, we have developed a biosensor method for LF detection with high sensitivity and sufficient stability.

Keywords: Lactoferrin; Immunosensor; Bioelectrochemistry; Cyclic voltammetry

FULL TEXT

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