Short Communication

Piezoelectric Immunosensor for Tissue Transglutaminase Antibodies Determination for Celiac Disease Diagnostic and Comparison with ELISA Method

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Celiac disease (CD) is a hereditary disease characterized by occurrence of IgA class antibodies against tissue transglutaminase (anti-tTG) in serum. In this work, we compared standard Enzyme-Linked Immunosorbent Assay (ELISA) with a quartz crystal microbalance (QCM) measuring system for determination of anti-tTG. The new immunosensor is based on immobilized tTG in an open conformation (open-tTG) and optimized for assay of IgA anti-tTG with limit of detection 13.3 RU/ml and good specificity and stability over time. Testing serum samples of patients suffering CD showed suitability of the prepared immunosensor for practical performance. Compare to ELISA requiring skilled personnel and expensive equipment, the newly constructed measuring system for measurement of QCM sensor is cheap, easy to prepare and does not require any special skill thus it can be introduced into any laboratory or general practitioner office.

Keywords: Celiac disease; immunosensor; piezoelectric sensor; IgA antibodies; human tissue transglutaminase

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