APPLICATION OF EQCM (ELECTROCHEMICAL QUARTZ CRYSTAL MICROBALANCE) AS A BIOSENSOR TO IDENTIFY IMMUNE ILLNESS?

LITERATURE REVIEW

Introdução: Nowadays, different methods analytics have been emerged; some of them are an improvement of the techniques developed some years ago. The result of various researches has been giving opportunity to the science involves in different areas. QCM method has been achieving praiseworthy results because of the sensitive property that it has, for example, the relation between frequency and mass expressed this property clearly. The frequency suffers influence of different factors such as deposit of mass in QCM surface in a process elucidated by Sauerbrey (1959) and developed by himself through of Sauerbrey equation, called Sauerbrey effect. Thus, because of this sensibility, QCM is limited to in biosensor areas. Biosensors are very useful to analyse biological compounds. Their activity consist in make biological signal in a measurable form when are formed interactions between specific substrate and their receptor. Explain the application of QCM as a biosensor in immune system and how it is growing use in biomedical areas. Materiais e Métodos: The research is a literature review with focus in different websites, database and literatures. It was executed a deep analysis in article from recent years and it was considerate the principal achievements from the use of EQCM. Resultados e Discussão: Immunology area is a resourceful field that has received lot of improvements. This growth has been increased the progress of some treatments against auto- immune illness, allergic reaction and even allowed fast diagnostics for complex metabolic diseases. Interactions between Ab/Ag are very specific and sensitive, what allow increasing techniques in clinical medicine. Monoclonal antibody therapy is an alternative in diagnostic field, but immune sensor continues being the best in this aspect. Moreover, an immune sensor usually contains quartz crystal in their composition and utilizes the EQCM to measure biological signal. An EQCM- electrochemical quartz crystal microbalance - is equipment that utilize a piezoelectric transducer, in another word, there is a direct association between mass and frequency defined before as Sauerbrey effect and when is formed one film deposition onto the sensor?s surface occurs changes in the resonance frequency. Nowadays it is possible to see immune sensors printed out which work in the similar way of immune sensors system developed in laboratory. There is already one technique available to detect the troponin T of human heart. Conclusão: EQCM and immune system have become a new alternative to measure components in biofluids, which represents a significant advance in
clinical medicine, and extremely important to identify an immunological reaction. In the future, immune sensor might be used to better identification of complex disease processes but we could not leave to considerate some operation limitation from the technique.