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## Label free assay of albumin by a quartz crystal microbalance biosensor with an immobilized antibody

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Albumin is a protein serving as a standard marker in biochemistry which is assayed in the blood, blood serum or blood plasma. It serves as a marker in liver function test but its diagnostics importance has more applications. Currently, albumin can be determined by standard immunochemical like ELISA and spectral methods. In this study, immunosensor based on the piezoelectric 10 MHz Quartz Crystal Microbalance (QCM) was constructed to determine albumin in levels corresponding with expected concentration biological samples. The immunosensor contained an antibody specific to albumin interdigitated on a gold electrode of QCM by protein A. The immunosensor was used for the determination of albumin and limit of detection 0.234 mg/ml was reached in the calibration. The limit of detection is lower than the expected albumin plasma level which is 35–55 mg/ml. The immunosensor assay exerted full correlation with the standard ELISA and the immunosensor had also good long-term stability lasting for at least two months. The determination of albumin is a tool suitable for practical use in field therapy or home care conditions. No specific treatment of samples is necessary but specificity and sensitivity typical for ELISA is reached.

### Biography

Miroslav Pohanka has completed his graduation in Chemistry at Masaryk University Brno, Czech Republic in 2003; Doctor of Natural Science in Biochemistry at Masaryk University in 2006 and PhD in Biochemistry in 2008. He is an Associate Professor in Toxicology at University of Defense, Czech Republic in 2012 and Doctor of Sciences in Analytical Chemistry at Academy of Sciences, Czech Republic in 2014 and Professor in Analytical Chemistry at University of Pardubice, Czech Republic in 2016. He is an Author of more than 200 papers in journals with IF and his works were more than 2000 times cited according Web of Science.

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