ONLINE SAW-BIOAFFINITY MASS SPECTROMETRY FOR STRUCTURAL AND AFFINITY CHARACTERISATION OF TAU AND Aß-IMMUNE COMPLEXES

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Biosensors are devices able to detect a biochemical interaction between two molecular species and produce a physical signal, generally optical or electrical. The K5 S-sens® is a recently developed biosensor, capable of detecting small variations of mass by monitoring the changes of amplitude and frequency of the surface acoustic waves (SAW) through electric signals [1]. We report here affinity studies using the K5 S-sens® of the following antigen-antibody complexes: Aß (1-16) peptide with anti- Aß (1-16) antibody; Aß (12-40) with anti- Aß (17-28) antibody and Tau protein (isoform 2N/4R) with an anti-Tau specific antibody (clone TAU5). The antibodies were covalently immobilised (via a thiol linker) on the surface of a gold chip inside the biosensor, and their interactions with the specific peptide or protein were observed directly from biological fluids. Furthermore, the bound peptide or protein was eluted under acidic conditions from the gold chip and analysed by electrospray ionisation mass spectrometry (ESI-MS), to identify the primary structure [2]. The combination of SAW biosensor and ESI-MS was found to be an excellent tool for the affinity determination of Tau and Aß-structure and structure modification from biological sources.
