

Development of Folding Based Aptasensor for Ochratoxin a Using Different Pulse Voltammetry

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Abstract : Ochratoxins (OTA) are secondary metabolites present in a wide variety of food stuff. They are dangerous by-products mainly produced by several species of storage fungi including the *Aspergillus* and *Penicillium* genera. OTA is known to have nephrotoxic, immunotoxic, teratogenic and carcinogenic effects. Thus, needs a special attention for a highly sensitive and selective detection system that can quantify these organic toxins in various matrices such as cocoa beans. This work presents a folding based aptasensors by employing an aptamer conjugated redox probe (methylene blue) specifically designed for OTA. The aptamers were covalently attached to the screen printed carbon electrodes using diazonium grafting. Upon sensing the OTA, it binds with the immobilized aptamer on the electrode surface, which induces the conformational changes of the aptamer, consequently increased in the signal. This conformational change of the aptamer before and after biosensing of target OTA could produce the distinguishable electrochemical signal. The obtained limit of detection was 0.01 ng/ml for OTA samples with recovery of up to 88% in contaminated cocoa samples.

Keywords : ochratoxin A, cocoa, DNA aptamer, labelled probe

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