

## Concept of DNA biosensors with protective outer-sphere membranes

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DNA-based biosensors have been shown widely as effective tools and warning devices for tests of DNA association interactions including those with low molecular weight compounds like drugs and chemicals as well as tests of DNA integrity in the presence of various chemical and physical agents [1, 2]. Specific feature of these biosensors is that the selectivity is not referred to given analyte(s), but mostly to the surface attached nucleic acids [2, 3]. As at biosensors generally, the stability and response of the DNA-based biosensors can be affected by high molecular weight and surface active compounds present in test medium/solution. Here we report a concept and effects of protective membranes used at the construction of biosensors to achieve necessary selectivity and eliminate interferences by high molecular weight compounds.

DNA biosensors with carbon electrode transducers and outer-sphere membranes have been prepared and applied to tests of some drink samples. Efficiency of Nafion, chitosan and other polymers deposited on the DNA biorecognition layer have been tested with respect to value and stability of the biosensor response in dependence on time of incubation in solutions of standard surface active chemicals and matrices of drinks. Complex detection approach based on an application of several modes such as SWV anodic response of the guanine moiety, CV signals of the redox active dsDNA intercalator and the ferricyanide anion as indicator present in solution together with electrochemical impedance spectroscopy has been utilized to characterized the DNA interactions as well as to evaluate antioxidative properties of some drinks regarding the oxidative DNA damage [4-6].

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