ELECTROGRAFTING VIA ARYL DIAZONIUM CHEMISTRY: A VERSATILE METHOD FOR REDUCING INTERFERENCE IN GLUCOSE BIOSENSORS

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One of the key points in developing biosensors for glucose monitoring is the efficient elimination of the electrode response due to interferents commonly encountered in biological samples [1]. We report here a novel method for obtaining interference-free glucose biosensors using thin organic films deposited by electrografting aryl diazonium salts. The functionalization of conductive surfaces by electrochemical reduction of diazonium salts is a versatile and efficient method for obtaining modified electrodes [2].

Modified platinum electrodes were obtained by potential cycling in acetonitrile solutions of benzenediazonium salts having different substituents in the *para* position. We have studied the electrochemical oxidation of ascorbate, urate, paracetamol and cysteine on the modified electrodes and found that the oxidation of these species is suppressed to varying degrees, depending on the substituents attached to the phenyl rings. At the same time, the electrochemical oxidation of H_2O_2 is only affected to a minor extent by the surface layers.

Glucose biosensors were constructed by depositing on the modified platinum surfaces a sensing layer consisting of cross-linked glucose oxidase-chitosan composite, following a protocol developed by Tan et al. [3]. The biosensors had a fast response, an average sensitivity of 20÷25 mA mM^{-1} cm^{-2} and excellent selectivity.

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