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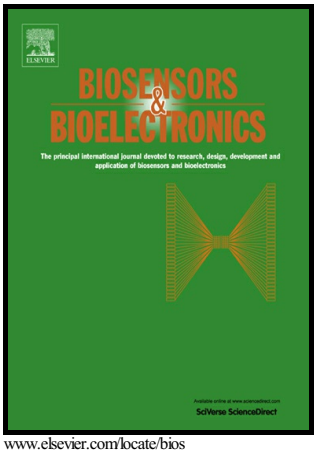

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Disposable electrochemical detection of breast cancer tumour marker CA 15-3 using poly(Toluidine Blue) as imprinted polymer receptor

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Abstract

In this work, electrically-conducting poly(Toludine Blue) was employed for the first time as synthetic receptor film, prepared by Molecular Imprinting strategies and using electrochemical methods, for the specific screening of breast cancer biomarker Carbohydrate Antigen 15-3 (CA 15-3).

The protein imprinted poly(Toluidine Blue) film was grown in a pre-formed Toluidine Blue (TB) tailed SAM at the AuSPE surface, which greatly enhanced the stability against degradation of the Molecular Imprinted Polymer (MIP) film at the electrode surface.

The MIP receptor film recognition ability towards the protein was investigated by fitting data to Freundlich isotherm. The binding affinity (K_F) obtained for the MIP system was significantly higher