

Introducing of cur cumin as a new DNA hybridization electro active indicator

Mini review

In this study, development of electrochemical deoxyribonucleic acid (DNA) biosensors based on used curcumin as new electroactive hybridization biosensor is described.

In the first section of this study, electrochemical behavior of curcumin on the pencil graphite electrode (PGE) was investigated by cyclic voltammetry method's in acetatebuffer pH=4.8, 0.5M.

In the second part of this study, DNA hybridization biosensor for detection of hybrid, The sensor relies on the immobilization of a 18-mer poly bases oligonucleotide (poly A, polyT, polyG, polyC) as probe on the pencil graphite electrode .The hybridization event was monitored by differential pulse voltammetry (DPV) using the curcumin oxidation signal. The selectivity of the biosensor was studied using some non complementary oligo nucleotides and at last, some experimental variables affecting the performance of the biosensor including: probe concentration, kind of indicator immobilization, (i.e, Immobilization time, concentration, and styler rate) were evaluated and optimum conditions determined for each.

In the third part of this work, development of an electrochemical DNA biosensor for detection of short oligonucleotide sequences related to IL-2 gene on the basis of label based protocol using curcumin (CU) as new electroactive label is described. The sensor relies on immobilization of 20-mer single strand oligonucleotide prob (CIL-2) ralated to IL-2 gene on electrode. The hybridization between the

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probe and its complementary sequence (HIL-2) as target was studied by differential pulse voltammetry of CU accumulated on PGE. Some hybridization experiment with non complementary oligonucleotide were carried out assess whether the suggested DNA sensor responds selectively to target. Diagnostic performance of biosensor is described and the detection limit is found to be 12 PM.

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Conflict of interest

Author declares that there is no conflict of interest.