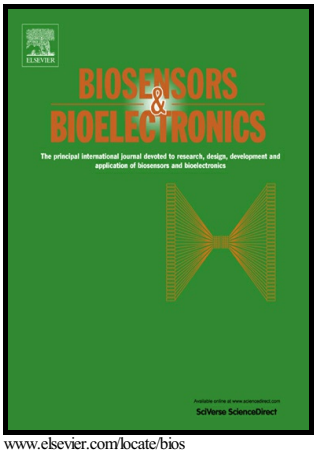

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ABSTRACT

Herein a label-free immunosensor based on electrolyte-gated organic field-effect transistor (EGOFET) was developed for the detection of procalcitonin (PCT), a sepsis marker. Antibodies specific to PCT were immobilized on the poly-3-hexylthiophene (P3HT) organic semiconductor surface through direct physical adsorption followed by a post-treatment with bovine serum albumin (BSA) which served as the blocking agent to prevent non-specific adsorption. Antibodies together with BSA (forming the whole biorecognition layer) served to selectively capture the procalcitonin target analyte. The entire immunosensor fabrication process was fast, requiring overall 45 min to be completed before analyte sensing. The EGOFET immunosensor showed excellent electrical properties, comparable to those of bare P3HT based EGOFET confirming reliable biosensing with bio-functional EGOFET immunosensor. The detection limit of the immunosensor was as low as 2.2 pM and within a range of clinical relevance.