# Desafios em Imunossensores “point-of-care”

## Challenges in point-of-care immunosensors

R. F. Dutra*

[1] Departamento de Engenharia Biomédica, Universidade Federal de Pernambuco, Av. prof. Moraes Rego, 1235. Recife, Brazil.

Immunosensors for point-of-care diagnostic hold great promise for economic, rapid and practical diagnosis of several diseases and epidemiological surveillance. Electrochemical biosensors using amperometric transduction have several advantages as compared to optical and acoustical transductions due to their easy scale up, fast response and low cost connection with compact (hand-held) analyzers. However, several drawbacks on performance have limited their use in clinical diagnostic. The purpose here is to describe some strategies of sensor platforms using conducting polymer integrating carbon nanotubes, graphene and fullerene with new proprieties like the electrocatalytic surface, high surface area to biomolecule immobilizations. In order to overcome challenges required as a low limit of detection and a good reproducibility. Different nanocomposites were electrosynthetized by using a mixture the respective carbon allotrope and monomers of conductive polymer (pyrrol, thiophene, ethylendiamine, etc.) and antigen or antibodies tested showing a contribution in amperometric detection. It was observed that the synergism between these materials with increased the electron transfer charge, electrode surface area, amount of immobilized biomolecules, faradaic current and conductivity; besides some strategies promoted reading without the redox probe solutions on measurements. Cardiac troponin T, dengue, hepatitis and degenerative disease were samples of the detected analytes in these immunosensors. It was obtained label-free and redox probe-free responses using amperometric electrochemical technique that allowed the detecting of analytes in human serum. These prospective sensors are potentials for point-of-care testing with ease scale-up and greater performance.

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* **e-mail:** rosa.dutra@ufpe.br