


## **Justification letter describing the focus of the research-**

Various deadly diseases (Dengue, chikungunya, cancer) has been around for a while, but it is still a major concern worldwide. To treat infected patients effectively, researchers make every effort. The management of deadly diseases can greatly benefit from early and prompt detection. There are many reports available on the biosensor for the detection of various diseases utilizing commercialized screen-printed electrodes, but these electrodes have various limitations such as the electrode setup is very expensive, made up of plastic, rusting issues. Therefore, to overcome these limitations low-cost paper based biosensor were constructed. The use of paper electrodes has advantages such as the substrate used for the electrode fabrication is normal paper sheet, and very cost effective, easy to fabricate. Another low-cost biosensor were also developed i.e., Lab in tube or colorimetric biosensor, in which detection of diseases on the bases of color changing principle. As a result, the current study describes the development of low-budget biosensor with sensitivity, quick response, and early detection of various diseases. Nanomaterial was also utilized in the systems to enhance signal responsiveness. In the future, such low-cost biosensor designs can be improvised by using different patterns of principle without employing sophisticated and expensive types of equipment. In this work, we have presented the analytical performance of biosensor based on bio-recognition elements for the selective identification of the diseases, therefore qualifying the proposed biosensor as a promising option for accurate & sensitive diagnosis of various diseases.



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