

Aptamer-based rapid diagnosis for point-of-care application

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ABSTRACT

Aptasensors have attracted considerable interest and widespread application in point-of-care testing worldwide. One of the biggest challenges of a point-of-care (POC) is the reduction of treatment time compared to central facilities that diagnose and monitor the applications. Over the past decades, biosensors have been introduced that offer more reliable, cost-effective, and accurate detection methods. Aptamer-based biosensors have unprecedented advantages over biosensors that use natural receptors such as antibodies and enzymes. In the current epidemic, point-of-care testing (POCT) is advantageous because it is easy to use, more accessible, faster to detect, and has high accuracy and sensitivity, reducing the burden of testing on healthcare systems. POCT is beneficial for daily epidemic control as well as early detection and treatment. This review provides detailed information on the various design strategies and virus detection methods using aptamer-based sensors. In addition, we discussed the importance of different aptamers and their detection principles. Aptasensors with higher sensitivity, specificity, and flexibility are critically discussed to establish simple, cost-effective, and rapid detection methods. POC-based aptasensors' diagnostic applications are classified and summarised based on infectious and infectious diseases. Finally, the design factors to be considered are outlined to meet the future of rapid POC-based sensors.

KEYWORDS

Aptamer; Biosensors; Diagnosis; Point of care

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