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A Review On Thread Based Biosensor And Its Applications Focusing On Diagnosis.

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ABSTRACT

A device or substance which can detect disease or medical condition is known as diagnostics and the use of threads for this purpose helps in the fabrication of thread-based diagnostic devices. Threads, with their excellent flexibility and wicking property, are widely used in biosensor fabrication. These economical microfluidic devices are cost-effective, long-lasting, with early and simple diagnostics. This review emphasizes the recent advances in thread-based diagnostics. These devices are economical and durable with diagnostics made early and easy. The threads used for this should be hydrophilic in property in order to transport both liquescent and non-liquescent fluids via capillary action. Since in the threads transfer of liquids occur by capillary action the need for an external pumping system or any other resources for sample propagation is minimized. These multifilament threads can be aligned based on our choice and the limitation of creating hydrophobic barriers as in paper-based diagnostics can be overcome by shifting to threads. Threads also showcase various advantages over paper and because of which they are becoming powerful tools. Thread-based point of care (POC) devices are uncomplicated, their wicking property makes them accountable. They can be used for qualitative as well as quantitative analysis and can also be incorporated with various other materials to make biological sensors. Thread-based diagnostic materials have inherent applications in early-stage diagnostics, food quality testing, environmental analysis, and in industries remarkably because of their minimal fabrication cost. These low-cost micro Thread based analytical devices (μ TADs) have huge potential in developing countries because of their cost, easy fabrication, and a huge point of care diagnostics.

Keywords: Diagnostics, Thread-based diagnostics, point of care devices, biological sensors, paper analytical devices.

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