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From: (10)(2e)@editorialmanager.com
Sent: Tue 9/29/2020 4:04:54 AM
Subject: Invitation to review for Biomedical Journal
Received: Tue 9/29/2020 4:04:57 AM

Manuscript Number: BJ-D-20-00728

Integral role of electrospun nanofibers in analytical upgradation of Point-Of-Care technology: A possible platform for the detection of SARS-CoV-2

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Biomedical Journal

Abstract:

The Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2), the causative agent of Coronavirus Disease 2019 (COVID-19) has initiated a bizarre wave that the humankind has not witnessed since the World War II. Until the discovery of a stable vaccine, the prompt detection of the disease might be helpful for timely treatment and mitigate the current situation. The existing methods of detection are comprised of the Reverse Transcription Polymerase Chain Reaction test and the Computed Tomography scans. Though they can deliver accurate results, their limited supply and need for technical assistance demand for technology upgradation to serve the need of the hour. One striking solution is the advent of point-of-care (POC) devices. Recently, a lateral flow assay – based POC device has been used for the detection of SARS-CoV-2 antigen. However, this technique lacks sensitivity and accuracy. At this juncture, electrospun nanofibers (ESN) can be utilized by providing a platform to enhance the detection of signals in the form of a biosensor and alleviate the drawbacks of POC devices. Furthermore, ESN is endowed with numerous qualities like high surface-area-to-volume ratio, manageable surface conformation, and appropriate functionalization which have facilitated its use in the detection of Dengue virus, HIV virus and specific biomarkers viz. IgG antibody, C-reactive protein, cardiac troponin, serum cytokine, lactate dehydrogenase (LDH), etc., a few of which are also recognized as biomarkers specific to COVID-19. Hence, we describe the role of electrospun nanofibers for the detection of COVID-19 specific biomarkers by a lateral flow assay-based point-of-care device.

