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Recent Advancements in the Diagnosis and Management of Cancer Using Biomaterials-Fabricated Nanofibers: A Review

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Author(s): Biswajit Basu, Ayon Dutta, Dipanjana Ash, Kevinkumar Garala, Sudarshan Singh* and Bhupendra G Prajapati*

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Abstract

Cancer, a complicated and multi-dimensional medical concern worldwide, can be identified via either the growth of malignant tumours or colonisation of nearby tissues attributing to uncontrollable proliferation and division of cells promoted by several influential factors, including family history, exposure to pollutants, choice of lifestyle, and certain infections. The intricate processes underlying the development, expansion, and advancement of cancer are still being studied. However, there are a variety of therapeutic alternatives available for the diagnosis and treatment of cancer depending on the type and stage of cancer as well as the patient's individuality. The bioactive compounds fortified nanofiber-based advanced therapies are revolutionary models for cancer detection and treatment, specifically targeting melanoma cells via exploring unique properties, such as increased surface area for payload, and imaging and bio-sensing capacities of nano-structured materials with minimal damage to functioning organs. The objective of the study was to gain knowledge regarding the potentiality of Nanofibers (NFs) fabricated using biomaterials in promoting cancer management along with providing a thorough overview of recent developmental initiatives, challenges, and future investigation strategies. Several fabrication approaches, such as electrospinning, self-assembly, phase separation, drawing, and centrifugal spinning of bio-compatible NFs along with characterization techniques, have been elaborated in the review.

Keywords: [Biomaterials](#), [cancer](#), [cellulose](#), [electrospinning](#), [malignant tumour](#), [nanofibers](#).

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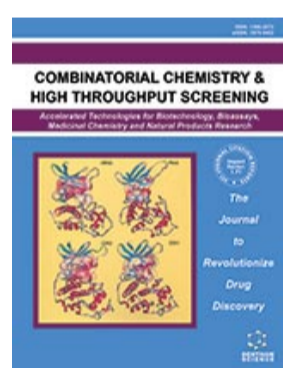
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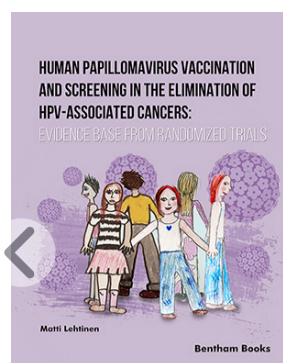
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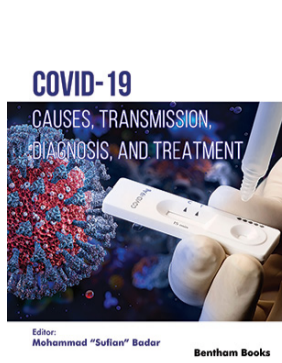
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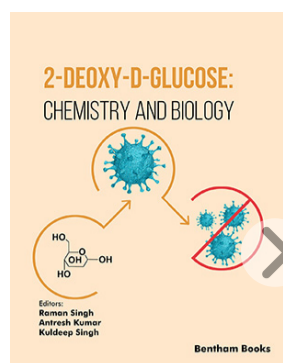
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