Applications of Nanomedicine in Brain Tumor Therapy: Nanocarrierbased Drug Delivery Platforms, CChallenges, and Perspectives

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Abstract

Background: The most difficult kind of cancer to treat is brain cancer, which causes around 3% of all cancer-related deaths. The targeted delivery is improved with the use of technologies based on nanotechnology that are both safe and efficient. Because of this, there is now a lot of research being done on brain cancer treatments based on nanoformulations.

Objective: In this review, the author's primary aim is to elucidate the various nanomedicine for brain cancer therapy. The authors focus primarily on the advancement of nanotechnology in treating brain cancer (BC). This review article gives readers an up-to-date look at publications on sophisticated nanosystems in treating BC, including quantum dots (QDs), nanoparticles (NPs), polymeric micelles (PMs), dendrimers, and solid lipid nanoparticles (SLNs), among others. This article offers insight into the use of various nanotechnology-based systems for therapy as well as their potential in the future. This article also emphasizes the drawbacks of nanotechnology-based methods. Future perspectives for treating brain cancer using proteomics and biomimetic nanosystems are briefly discussed.

Conclusion: In this review, we review several aspects of brain cancer therapy, including various nanomedicines, their challenges and future perspectives. Overall, this article gives a thorough overview of both the present state of brain cancer treatment options and the disease itself.

Keywords: Brain cancer; biomimetic; blood-brain barrier; dendrimers; nanotechnology; proteomics; quantum dots; solid lipid nanoparticles.

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