

عنوان مقاله:

T-cell Membrane-Coated Nanomaterials in Cancer Treatment

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خلاصه مقاله:

To date nanoparticles (NPs) have been widely explored for their use in cancer. These are classified as highly efficient drug delivery systems because of their exceptional properties and design flexibility that rendered them highly targeted and safe. However, nanoparticles still face challenges regarding biological stability, non-specificity, recognition as a foreign substance, and speedy clearance that limits their applications in clinical use. To overcome these drawbacks, advanced biomimetic nanotechnology has been proposed using T-cell membrane-coated NPs as superior drug delivery systems which can increase their circulation time and prevent rapid clearance from the body by the immune system. The immune T-cells have specific surface proteins that transfer unique functionality to biomimetic NPs during the membrane extraction and coating process. Such proteins on the T-cells surface provide the nanoparticles various advantages including prolong circulation, increasing the range of drug targets, controlled release, specified cellular interaction, and limited in vivo toxicity. In this review, T-cell membrane-based biomimetic nanosystems, their detailed extraction process, fabrication, coating over NPs, and the applicability of these biomimetic systems in cancer treatment are discussed. In addition, recent applications, future perspectives, and current challenges for their clinical translation are also presented.

کلمات کلیدی:

Cancer therapy, T-cell- decorated nanoparticles, T-cell membrane-coated, Trojan horse nanoparticles

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