



Advanced Review

Outer membrane vesicles as biomimetic vaccine carriers against infections and cancers

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Abstract

In the last decade, nanoparticle-based therapeutic modalities have emerged as promising treatment options for cancer and infectious diseases. To improve prognosis, chemotherapeutic and antimicrobial drugs must be delivered selectively to the target sites. Researchers have increasingly focused their efforts on improving drug delivery, with a particular emphasis on cancer and infectious diseases. When drugs are administered systemically, they become diluted and can diffuse to all tissues but only until the immune system intervenes and quickly removes them from circulation. To enhance and prolong the systemic circulation of drugs, nanocarriers have been explored and used; however, nanocarriers have a major drawback in that they can trigger immune responses. Numerous nanocarriers for optimal drug delivery have been developed using innovative and effective biointerface technologies. Autologous cell-derived drug carriers, such as outer membrane vesicles (OMVs), have demonstrated improved bioavailability and reduced toxicity. Thus, this study investigates the use of biomimetic OMVs as biomimetic vaccine carriers against infections and cancers to improve our understanding in the field of nanotechnology. In addition, discussion on the advantages, disadvantages, and future prospects of OMVs will also be explored.

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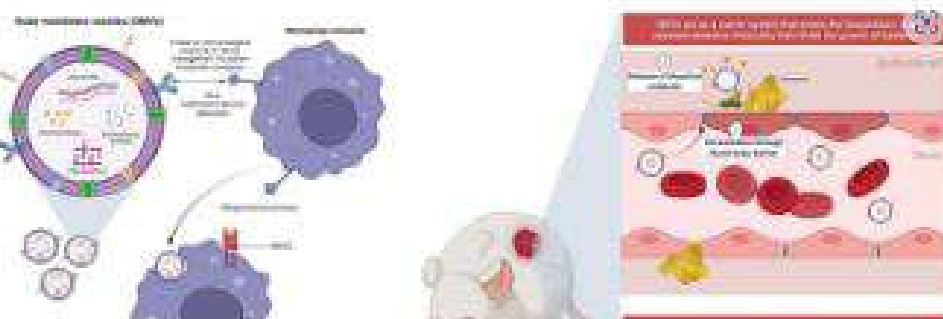
Therapeutic Approaches and Drug Discovery > Nanomedicine for Oncologic Disease

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Graphical Abstract

Potential use of outer membrane vesicle derived from gram negative bacteria for vaccine carriers against infections and cancers.



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