عنوان مقاله:

Liposome-Based Carriers for CRISPR Genome Editing

محل انتشار:

چهارمین کنفرانس بین المللی یافته های پژوهشی در علوم پایه و علوم مهندسی (سال: 1402)

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خلاصه مقاله:

The DNA editing technique CRISPR has sparked a renewed interest in gene therapy. Delivering CRISPR efficiently is still a difficulty, though. Liposomes are promising because they help with endosomal escape and trigger-regulated cargo release. Precise genetic alterations in cells and tissues are made possible by the combination of CRISPR and liposomes. Immune cell enhancement and genetic mutation correction are two examples of applications. Liposome-based CRISPR provides a useful instrument for effective genomic changes and may lead to subsequent developments. Liposomes are extensively studied as carriers for CRISPR/Cas۹ delivery. The surface properties of liposomes, such as surface charge, PEGylation, and ligand modification, have a significant impact on gene silencing efficiency. The barriers of systemic CRISPR/Cas۹ delivery, including blood circulation, tumor penetration, and cellular uptake/endosomal escape, are analyzed using liposomes with different surface charges, PEGylations, and ligand modifications. Cationic formulations are dominant, neutral formulations perform well, and anionic formulations are generally not suitable for CRISPR/Cas۹ delivery. The achievements, existing problems, and future perspectives in liposomal CRISPR/Cas۹ delivery are summarized.

کلمات کلیدی:

bio cargo, liposome, CRISPR, lipid, gene editing