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LIPOSOMAL SYSTEMS AS VIABLE DRUG DELIVERY TECHNOLOGY FOR SKIN CANCER SITES WITH AN OUTLOOK ON LIPID-BASED DELIVERY VEHICLES AND DIAGNOSTIC IMAGING INPUTS FOR SKIN CONDITIONSNaseem Akhtar¹ and Riaz A. Khan^{2*}

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ABSTRACT

Skin cancer is among one of the most common human malignancies wide-spread world-over with mortality statistics rising continuously at an alarming rate. The increasing frequency of these malignancies has marked the need for adopting effective treatment plan coupled with better and site-specific delivery options for the desired therapeutic agent's availability at the affected site. The concurrent delivery approaches to cancerous tissues are under constant challenge and, as a result, are evolving and gaining advancements in terms of delivery modes, therapeutic agents and site-specificity of the therapeutics delivery. The lipid-based liposomal drug delivery is an attractive and emerging option, and which is meticulously shaping up beyond a threshold level to a promising, and viable route for effective delivery of the therapeutic agents and other required injunctions to the melanoma and non-melanoma skin conditions. An update on liposomal delivery of chemotherapeutic agents, natural-origin compounds, photosensitizer, and DNA repair enzymes as well as other desirable and typical delivery modes employed in drug delivery and in the treatment of skin cancers is discussed in details. Moreover, liposomal delivery of nucleic acid-based therapeutics, *i.e.*, small interfering RNA (siRNA), mRNA therapy, and RGD-linked liposomes are among the other promising novel technology under constant development. The current clinical applicability, viable clinical plans, future prospects including transport feasibility of delivery vesicles and imaging techniques in conjunction with the therapeutic agents is also discussed. The ongoing innovations in liposomal drug delivery technology for skin cancers hold promise for further development of the methodology for better, more effective and site-specific delivery as part of the better treatment plan by ensuring faster drug transport, better and full payload delivery with enough and required concentration of the dose.

KEYWORDS

Liposomes, Liposomal Drug Delivery Systems, Lipid-based Drug Delivery, Chemotherapeutic Agent, Natural Products, Photo-sensitizer, Photodynamic Therapy (PDT), DNA Repair Enzyme, Malignancy, Skin Imaging, Skin Cancer

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