

A Comprehensive Study on the composition, Biomedical and Therapeutic Application of Liposome as a drug delivery system

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ABSTRACT

Over the last 30 years, the liposome's potential as a medicinal carrier has garnered a lot of interest. The liposome is a closed phospholipid bilayer vesicular structure. Liposomes are appealing vehicles in the area of drug delivery due to their biocompatibility, biodegradability, and ability to encapsulate both hydrophilic and hydrophobic pharmaceuticals. Moreover, great technical advances have led to the widespread use of liposomes in various fields as delivery vehicles for anti-cancer, bio-active molecules, diagnostics, and therapeutic agents, such as remote drug loading, triggered release liposomes, ligand-targeted liposomes, liposomes containing combinations of drugs, and so on. Site-targeting, prolonged or controlled release, protection from degradation and clearance, improved therapeutic benefits, and less harmful side effects are only some of the advantages of liposomes over conventional drug delivery methods. To better adapt the common liposome to the diverse environment of the human and animal body, researchers have developed a variety of functionalized liposomes-based drug delivery systems by altering the head, tail, and bond of lipid molecules. Liposomes offer several benefits when used in cosmetics: (3) Liposomes encapsulating oil-soluble and water-soluble active substances may lengthen the action duration of API by extending the time it takes for the API to penetrate the skin and have an effect. Many other liposome-based techniques are now being evaluated at various phases of clinical testing, making them the first nano delivery systems to make it from the lab into medical practice.

Keywords: Liposome-based drug delivery, liposome, functional modification, nano-scale, biomedical application, ligand-targeted liposome