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Drug Delivery *via* Niosomal Noisome

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Abstract

Noisome, also known as non-ionic surfactant vesicles are tiny lamellar structures generated when a non-ionic surfactant of the alkyl or dialkyl polyglycerol ether class is mixed with cholesterol and hydrated in aqueous conditions. They're vesicular structures that look like liposomes and can transport both amphiphilic and lipophilic medicines. The basic method of synthesis is the same, namely, hydration of the lipid phase by an aqueous phase, which can be either a pure surfactant or a surfactant-cholesterol combination. Un-entrapped medication is removed from niosomal dispersion by dialysis centrifugation or gel filtering. Niosomes are vesicles made of synthetic non-ionic surfactants that are unilamellar or multilamellar. They resemble liposomes in appearance. Many pharmacological drugs could benefit from niosomal drug delivery for their effect against various disorders. Niosomes have various advantages, making them a better medication delivery alternative.

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Introduction

The capacity to direct a therapeutic agent specifically to the desired site of action with little or no contact with non-target tissue is known as drug targeting. There is currently no commercial drug delivery device that achieves site-specific delivery with predictable drug release kinetics. Niosomes, also known as non-ionic surfactant vesicles, are tiny lamellar structures generated when a non-ionic surfactant of the alkyl or dialkyl polyglycerol ether class is mixed with cholesterol and then hydrated in aqueous medium.

Structure of Noisome

A typical noisome vesicle would be made up of a vesicle-forming amphiphile, such as Span-60, which is normally stabilised by the addition of cholesterol, and a little quantity of anionic surfactant, such as dactyl phosphate, which also aids in vesicle stabilisation.

Advantages of Niosomes

- The vesicles could operate as a drug repository, slowly releasing the medicine
- They are osmotically active and stable, as well as increasing the entrapped drug's stability
- They boost drug molecule's therapeutic performance by delaying their clearance from the circulation, shielding them from the biological environment, and limiting their effects to target cells
- The surfactants utilised are non-immunogenic, biodegradable, and biocompatible
- They increase medication penetration via the skin and improve oral bioavailability of poorly absorbed medicines
- They can be administered orally, parentally, or topically to reach the site of action
- The vesicles could operate as a drug repository, slowly releasing the medicine
- Surfactants do not require any specific handling or storage conditions
- They may accept drug molecules with a wide variety of solubilities because to the unique infrastructure consisting of hydrophilic, amphiphilic, and lipophilic moieties combined

Types of Niosomes

The niosomes are classed based on the number of bilayers (e.g., Multilamellar Vesicle (MLV) and small Unilamellar Vesicle (SUV)), size (e.g., LUV and SUV), or manufacturing process (e.g., REV and DRV). The following are the several types of niosomes: MLVs (size 0.05 m) and LUVs (size 0.10 m) are the two types of MLVs.

Conclusion

Niosomes are a type of nano-drug carrier that can be used to create efficient drug delivery systems. They provide a wonderful way to load hydrophilic, lipophilic or both medicines at the

same time. Niosomes offer a lot of potential as a medication delivery vehicle for anticancer and anti-infective drugs. Using novel concepts such as proniosomes, the niosome's drug delivery capacity can be enhanced. Niosomes can also be used as a vaccination adjuvant and as a diagnostic imaging tool. Niosomes are used to better target the medicine to the correct tissue location. Niosomes are made up of single-chain surfactant molecules that are not charged. Niosomes can be used for a variety of medication delivery methods, including targeted, ocular, topical, and parental.