CLINICAL INVESTIGATION

Niosomal Drug Delivery

Submitted: 02 July 2021; Accepted: 12 July 2021; Published online: 18 July 2021

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Noisy vesicles, also known as non-ionic surfactant vesicles, are microscopic lamellar structures formed when a non-ionic surfactant of the alkyl or dialkyl polyglycerol ether class is combined with cholesterol and hydrated under aqueous circumstances. They're vesicular structures that resemble liposomes and are capable of transporting both amphiphilic and lipophilic drugs. The basic synthesis mechanism is the same: the lipid phase is hydrated by an aqueous phase, which can be either a pure surfactant or a surfactant-cholesterol mixture. Dialysis centrifugation or gel filtration is used to extract entrapped medicines from liposomal dispersion. Niosomes are unilamellar or multilamellar vesicles formed of synthetic non-ionic surfactants. They have the look of liposomes. For their action against diverse illnesses, many pharmaceutical medications could benefit from liposomal drug delivery. Niosomes have a number of features that make them a better medication delivery option. Drug targeting is the ability to send a medicinal substance to the desired location of action with little or no contact with non-target tissue. No commercial medication delivery device currently exists that achieves site-specific delivery with predictable drug release kinetics. Niosomes, also known as non-ionic surfactant vesicles, are microscopic lamellar structures formed when an alkyl or dialkyl polyglycerol ether class non-ionic surfactant is combined with cholesterol and subsequently hydrated in an aqueous media. A typical noisy vesicle would be composed of a vesicle-forming amphiphile, such as Span-60, that is generally stabilized by the addition of cholesterol, and a small amount of an anionic surfactant, such as dactyl phosphate, that also aids in vesicle stabilization.

The vesicles could act as a drug storage facility, slowly releasing medication. They are osmotically active and stable, as well as improving the stability of the entrapped medication. They improve the therapeutic effectiveness of drug molecules by delaying their clearance from circulation, sheltering them from the biological environment, and confining their actions to target cells. Non-immunogenic, biodegradable, and biocompatible surfactants were used. They improve the oral bioavailability of poorly absorbed medications by increasing medication penetration via the skin. They can be taken orally, given to children, or applied topically to the affected area. The vesicles could act as a drug repository, slowly releasing the medicine. Surfactants don't need to be handled or stored in any particular way. Because of the unusual infrastructure of hydrophilic, amphiphilic, and lipophilic moieties combined, they can take medicinal molecules with a wide range of solubilities.

The number of bilayers (e.g., Multilamellar Vesicle [MLV] and Small Unilamellar Vesicle [SUV]), size (e.g., LUV and SUV), and manufacturing procedure are used to classify niosomes (e.g., REV and DRV). The many types of niosomes are as follows: The two types of MLVs are MLVs (size 0.05 m) and LUVs (size 0.10 m). Niosomes are a type of nano-drug carrier that can be exploited in the development of effective drug delivery systems. They offer a fantastic approach to simultaneously load hydrophilic, lipophilic, or both medications. Niosomes have a lot of potential as an anticancer and anti-infective drug delivery mechanism. The niosome's drug delivery capacity can be improved by using novel concepts such as proniosomes. Niosomes can potentially be utilized as a diagnostic imaging tool and as a vaccine adjuvant. Niosomes are utilized to help drugs get to the right place in the body. Niosomes are made up of non-charged single-chain surfactant molecules.