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Liposomes: Dermafirm's Innovative and Patented Method for Creating Effective Solutions for Healthy Skin

By Robert Park

History of Liposomes

Liposomes protect, transport and release your drug or ingredients at the right place and time. "The history of liposomes goes back to mid 1960's and credit of their birth goes to Banghamand and his coworkers, who discovered that phospholipids in presence of suitable solvents form bilayered membranes which finally curl-on to form unilamellar of multiamellar vesicles. The history of liposomes can be divided into three periods: Genesis, Middle age and Modern era. A few years later, the structural description of liposomes was unveiled as small devices made of one or more closed phospholipid bilayers." Liposomes have been further developed by pharmaceutical and later cosmetic industries also started to use liposome technology since 1986. The major types of liposomes are the multilamellar vesicle, the small unilamellar liposome vesicle and the large unilamellar vesicle and the cochleate vesicle.

Dermafirm Inc has the patented elastic liposomes technology for the large unilamellar vesicle (LUV).

Dermafirm's Liposomes

Dermafirm Inc has the patented elastic liposomes technology for the large unilamellar vesicle (LUV). Typically liposomes can be created by sonicating a dispersion of amphipatic lipids such as phospholipids in water. The major challenge of liposome delivery systems is the penetration of the epidermis layer. Due to the building blocks of epidermis layers such as ceramide, cholesterol, and lipids among others, topical absorptions are not easy to achieve. Many technologies were introduced to increase the efficiency of absorption such as electroporation, iontopheresis, sonohoresis, tape stripping, MTS or AMTS and liposomes among others.

Liposomes are one of the nanotechnologies in cosmetics to increase the absorption of active ingredients. Dermafirm's elastic liposome technology minimized the oxidative stress on active ingredients while increasing the absorption after the delivery to improve brightening, wrinkles, and prevent oxidative stress on skin among others. It is disputable whether liposomes penetrate deep into the skin layers but many pilot and clinical studies have demonstrated to be able to disorder the complex structure of the lipid sheets. The result is an enhancement of penetration of chemicals via the "polar and lipid" routes. In this way, elastic liposomes deliver active ingredients directly to aging cells and would improve skin hydration and texture, reduce fine lines and diminish wrinkles.

Seoul National University of Science and Technology's In Vitro skin permeation study, Polymer(Korea), showed a significant increase when quercetin (plant extracted flavonol) was delivered using elastic

liposomes. Dermafirm has the capability of creating smaller than 0.0002mm elastic liposomes which are about 1/100 the size of pore in diameter. Deramfirm's patented Elastic Liposomes maximize the efficacy of encapsulating active ingredients 70% or more compared to other types of liposomes at 35-65%.

For example, the active ingredients in the BIOTOC 3X Ampoule (launching in August 2020), such as astaxanthin, peptides, and collagen can be delivered deep into the skin layers. In February and March 2020, the Korea Institute of Dermatological Sciences conducted BIOTOC 3X clinical studies that showed the efficacy of applying BIOTOC 3X, concluding that topical application alone has statistical significance. These results indicate that the BIOTOC 3X Ampoule can penetrate deep enough in the skin layers of epidermis and dermis (most likely top layer only) to make a difference.

If the BIOTOC 3X ampoule is used with MEDI Nanopen Pro (needle size is 0.2mm), the length of the microchannel would be a minimum of 0.2mm deep which either creates the microchannels to the bottom of the epidermis or even at the top of dermis layers (see Reference B).

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Dermafirm's Liposomal Product Lines

- Ultra Soothing Toner R4 - 200ml
- Ultra Soothing Formula Emulsion R4 - 200ml
- Ultra Soothing Mask - 30g (5 Packs)
- Advanced Neck Cream - 40g
- BIOTOC 3X Ampoule - 15ml - Launching in August 2020
- BIOTOC Multicomplex (name not finalized) - Coming end of 2020 or beginning of 2021

Tips for using Dermafirm's Elastic Liposomal Products

1. Be gentle with applying liposomal solutions against your skin. Too much pressure of rubbing and tapping can damage the structure of liposomes.

2. Before applying liposomal solutions, cleanse and exfoliate your skin. Apply toner and serum for your appropriate skin type.

3. Liposomal solutions are absorbed rapidly and you may feel dryness on your skin. Apply lotions or creams to hydrate the skin.

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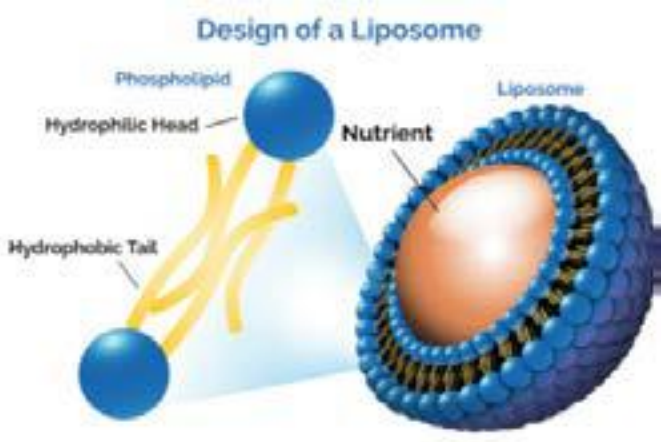
ADDITIONAL INFORMATION

Dermafirm Liposome LUVs are created in Dermafirm's LAB and nutrients (i.e. active ingredients) are encapsulated by bi-layers of the spherical shape of phospholipid. Phospholipids consist of both a hydrophilic head (water-soluble) and a hydrophobic tail (oil soluble).



Epidermis - It is the outermost layer of the skin and categorized into five horizontal layers. It consists of anywhere between 50 cell layers to 100 cell layers for thickness averaging about 0.1mm or equivalent of one sheet of paper.

Dermis - It is a fibrous network of tissues that provides structure and resilience to the skin. This middle layer is averaging about 2mm thick.

Hypodermis - The innermost layer of the skin and averaging about 2mm thick as well. It consists of well-vascularized, loose, areolar connective tissue and adipose tissue which functions as a mode of fat storage and provides insulation and cushioning for the integument.

Note: Skincare goal is to give positive impacts to Epidermis and Dermis layers only for improvements and skin health. There are many skincare products in the market claiming deep penetrations but unfortunately, not many ingredients can penetrate the skin. Most of the products fall short of even penetrating the epidermis layer when applied topically.

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