

MICRO LIPOSOME -1

The theoretical basis of the effects of Micro liposomes.

Liposomes are lipid-based vesicles that can encapsulate and deliver various substances, such as drugs, nutrients, or genetic material, to target cells or tissues.

The effects of liposomes are grounded in several theoretical principles related to their structure and behavior.

One fundamental aspect is the lipid bilayer structure of liposomes. Lipid molecules have hydrophilic (water-loving) heads and hydrophobic (water-repelling) tails. In an aqueous environment, lipids spontaneously form bilayers, with their hydrophilic heads facing the surrounding water and their hydrophobic tails orienting towards each other.

This bilayer structure allows liposomes to encapsulate hydrophilic substances within their aqueous core and incorporate hydrophobic substances within their lipid bilayers. The ability of liposomes to encapsulate and deliver substances is based on their size and composition.

Liposomes can be designed with specific characteristics, such as size, charge, and lipid composition, to optimize the encapsulation and release of desired substances. The size and surface charge of liposomes influence their stability, circulation time in the body, and interactions with target cells.

Liposomes can improve the delivery of encapsulated substances through various mechanisms. One important principle is enhanced permeation and retention (EPR) effect, which exploits the leaky vasculature and impaired lymphatic drainage in tumor tissues.

Liposomes can selectively accumulate in tumor tissues due to their size and surface properties, leading to enhanced drug delivery to cancer cells while minimizing systemic toxicity.

Furthermore, liposomes can facilitate drug delivery by protecting encapsulated substances from degradation or inactivation, improving their stability and bioavailability. Liposomes can shield encapsulated substances from enzymatic degradation and interactions with biological components, increasing their circulation time and allowing for targeted delivery to specific cells or tissues.

The theoretical basis of the effects of liposomes also includes principles related to cellular uptake and intracellular release. Liposomes can interact with cell membranes and undergo endocytosis, enabling the delivery of encapsulated substances into target cells. Once inside the cells, liposomes can release their cargo through various mechanisms, such as fusion with cellular membranes or intracellular lipid exchange.

Overall, the effects of liposomes are based on principles of lipid bilayer structure, encapsulation, stability, targeting, and cellular uptake. These principles provide a theoretical

foundation for the design and optimization of liposomal delivery systems, which have significant potential in drug delivery, gene therapy, and other biomedical applications.

MICRO LIPOSOME -2

Explanation of the characteristics of collagen.

Collagen is a fibrous protein that is a crucial component of the extracellular matrix in various tissues of the body. It exhibits several distinctive characteristics that contribute to its essential roles in structural support, tissue strength, and biological functions.

Structural Integrity: Collagen provides structural integrity to tissues, such as skin, tendons, ligaments, bones, and blood vessels.

Its unique triple helix structure, formed by three polypeptide chains, gives collagen high tensile strength and resistance to stretching. This property allows collagen to withstand mechanical forces and maintain tissue integrity.

Collagen is a lightweight protein that is mainly found in bones and skin. Collagen in connective tissue, which provides skin elasticity, makes up most of it. One of the crucial roles of collagen is to maintain skin moisture.

Thus, having an abundance of collagen in the skin can help prevent skin aging, vascular damage, and other issues.

However, the body's ability to synthesize collagen decreases rapidly as we age. The human body has 28 different types of collagens, and collagen decreases every year after the age of 20.

By the time a person is in their 40s, they will have lost over half of their collagen from their 20s. Additionally, after the age of 50, collagen decreases even more rapidly, causing skin aging to accelerate.

In particular, it is known that women's collagen, which is generated by estrogen after menopause, decreases by more than 30% within five years.

As a result, women's skin loses moisture and elasticity, causing wrinkles to appear suddenly. Lack of collagen can also cause skin dryness, age spots, sudden wrinkles, hair loss, and vascular diseases.

Recently, more people have started using collagen skincare products for anti-aging purposes. However, not all collagen skincare products are equally effective. Collagen has a molecular structure that is too large to be absorbed by the skin.

One effective way to choose a collagen skincare product is to evaluate how much collagen can pass through the dermis layer of the skin. Factors that affect the amount of collagen that can pass through the skin include:

Collagen molecule size

Collagen is measured in units of daltons (Da).

The lower the number of daltons, the smaller the size of the collagen molecule, making it more easily absorbed by the skin.

For example, animal-derived collagen has a size of around 50,000 daltons, while fish-derived collagen ranges from 5,000 to 10,000 daltons.

The skin absorption rate of low molecular weight collagen is very low, ranging from 0.001% to 0.1%.

Skincare products that contain collagen peptides within micro liposomes can increase skin absorption rates up to 95%.

Pure collagen content and auxiliary ingredients.

Some products only contain a small amount of collagen and mostly filler ingredients.

Products with high collagen content tend to have better skin-improving effects.

If a product contains auxiliary ingredients, it's important to confirm what those ingredients are. Components like elastin, hyaluronic acid, and ceramides can enhance collagen replenishment effects on the skin.

MICRO LIPOSOME -3

What are the benefits of collagen for the skin?

Many women prefer anti-aging skincare products that contain collagen. Collagen makes up 70% of our skin and decreases more rapidly as we age. After the age of 40, collagen in the skin decreases rapidly, leading to accelerated aging. Therefore, it is important to continually supplement collagen for the skin after the age of 40 to prevent rapid skin aging.

Until now, it was believed that collagen molecules were too large to penetrate the dermis. However, Micro Liposome technology was developed to deliver collagen peptides made from Star Fish collagen, which has the smallest possible size, to the dermis by placing them in Micro Liposomes with excellent flexibility and permeability.

The most important role of collagen is to act as an excellent natural moisturizer. One collagen molecule can hold over 2,000 water molecules.

Collagen provides the most important skin moisturizing effect for anti-aging, which can help improve wrinkles. Therefore, if collagen is abundant, the skin's moisturizing effect is increased, maintaining constantly moisturized and elastic skin.

Collagen is like the pillars and bricks that support our skin, playing the most important role in supporting and maintaining the skin's elasticity. Collagen is an important component that makes up about 30% of the protein in our bodies.

The lower the molecular weight of collagen, the faster it is absorbed into the dermis, resulting in a higher utilization rate in the body. Low-molecular-weight collagen peptides contained in Micro Liposomes fill the gaps between skin cells, trapping hyaluronic acid inside and retaining a large amount of moisture while responsible for the dermis' hydration.

Collagen has the benefits of improving skin elasticity, skin moisturization, brightening, and wrinkle improvement. It also stimulates fibroblasts to produce new skin tissue, such as elastin and hyaluronic acid, promoting natural skin regeneration.

Micro Liposome collagen cosmetics can penetrate the dermis more quickly than regular cosmetics. Low-molecular-weight collagen peptides contained in Micro Liposomes have the same structure as skin collagen, making them an essential ingredient for skin regeneration.