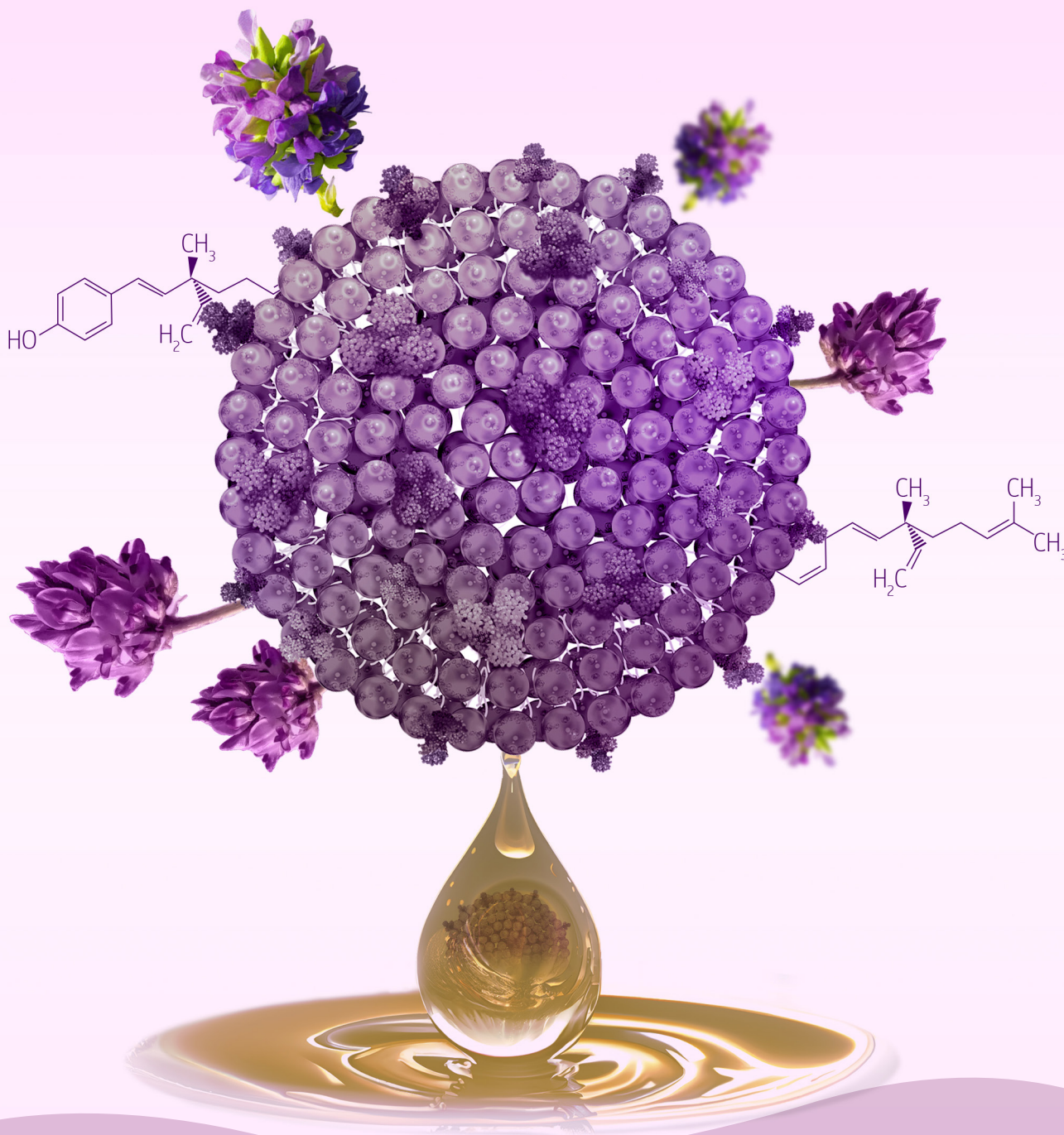


EXO DDS Bakuchiol

Deep Delivery Nanovesicles with 1% Bakuchiol + Avocado Exosome

EXO DDS Bakuchiol_01





EXO DDS Bakuchiol

Description:

BAKUCHIOL (1%), PERSEA GRATISSIMA FRUIT EXTRACT (0.70%) and BUTYL AVOCADETE (0.60%) encapsulated in vegan deep release nanovesicles (DDS- Deep Delivery System) exosome-like to add in cosmetic, cosmeceutical or dermopharmaceutical formulations.

INCI:

AQUA, POLYGLYCERYL-10 LAURATE, GLYCERIN, PROPANEDIOL, PHOSPHATIDYLCHOLINE, METHYLPROPANEDIOL, BAKUCHIOL, COCO-BETAINE, PERSEA GRATISSIMA FRUIT EXTRACT, BUTYL AVOCADETE, MALTODEXTRIN, SODIUM COCOYL ISETHIONATE, CAPRYLYL GLYCOL, BETASITOSTEROL, CITRIC ACID, PHENYLPROPANOL, COCOS NUCIFERA OIL, SODIUM ISETHIONATE, TOCOPHEROL

Appearance: Light Brown. Liquid

Reduces collagen breakdown **by 149%** supporting firmer, more youthful skin

Reduces inflammation **by 177%**, helping to soothe and balance irritated skin

+92% recovery of hyaluronic acid



1-10%
RECOMMENDED DOSAGE



150-300 nm
AVERAGE SIZE



97.4%
NATURAL ORIGIN*



Readily
Biodegradable



A million times more concentration
than natural exosomes

APPLICATIONS



Skin care
Anti-aging



Skin care
Balance



Body
Care

· Antioxidant · Wrinkles · Elasticity · Firmness · Anti-aging · Cell renewal · Pigmentation · Anti-inflammatory ·

1. THE AVOCADO EXOSOME

Rejuvenate your Skin with Avocado Biomimetic Exosome-like Technology

BOTANICAL INFORMATION: PERSEA AMERICANA (AVOCADO)

Scientific Name: Persea americana Mill.

Common Names: Avocado, Alligator Pear

Family: Lauraceae

AVOCADO A NATURAL BOOST FOR HYDRATED, HEALTHY SKIN

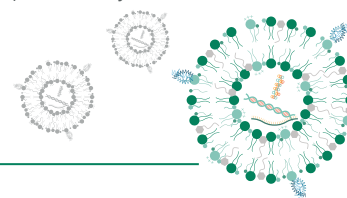
Persea americana (avocado) is rich in bioactive compounds like healthy fats, vitamins, and antioxidants, making it a powerful ingredient for skin and hair care. Its nourishing properties hydrate, protect, and rejuvenate the skin, offering anti-aging benefits and reducing inflammation. Known for promoting collagen production and improving skin elasticity, it is a key addition to cosmetic formulations aimed at enhancing skin health.

PROPERTIES OF OUR AVOCADO EXOSOME

- Hydration & Nourishment:** Avocado is packed with monounsaturated fatty acids, primarily oleic acid, which deeply nourish and moisturize the skin. This makes it an excellent choice for products targeting dry or dehydrated skin.
- Antioxidant Power:** The fruit is rich in vitamin E, vitamin C, and polyphenols, which protect the skin against oxidative stress caused by environmental aggressors such as UV rays and pollution. These antioxidants help to prevent premature aging, giving the skin a youthful glow.
- Soothing and Calming:** The phytosterols present in avocado reduce redness and inflammation, making it suitable for sensitive or irritated skin. It promotes a calm, balanced complexion while supporting the skin's natural healing processes.
- Enhancing Elasticity:** With its high content of vitamin A and potassium, avocado supports skin regeneration and collagen production, improving elasticity and reducing the appearance of fine lines and wrinkles.
- Natural Barrier Support:** Avocado oil's lipid profile strengthens the skin barrier, locking in moisture and protecting against external irritants. This property is particularly valuable in products for damaged or stressed skin.

The exosome-like delivery nanovesicles are designed to mimic the structure and function of natural exosomes for targeted delivery of active agents.

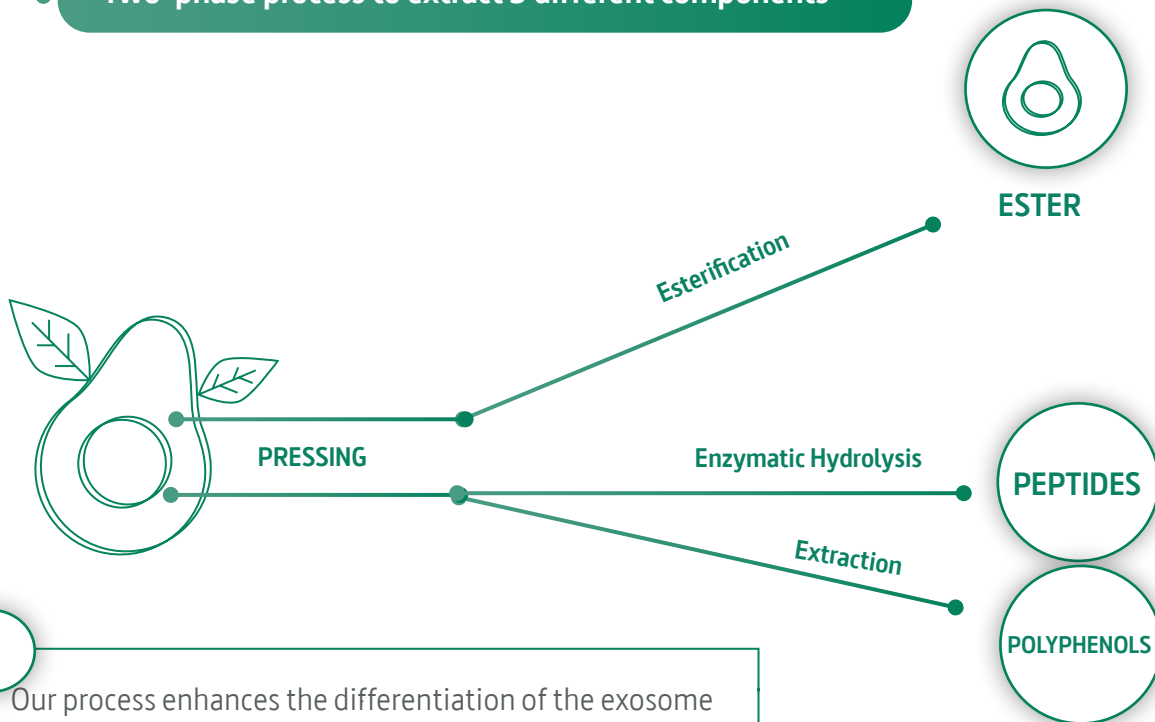
Biomimetic Exosomes bring the best of both worlds together. They take advantage of nature wisdom by using **plant extracts rich in biocompounds** such as proteins and polyphenols that have been used since ancient times and that have solid scientific evidence backing up their activity at a cellular level.





1.1 What makes our avocado exosome different

Two-phase process to extract 3 different components



Our process enhances the differentiation of the exosome membrane with esters, while proteins and peptides are strategically distributed between the membrane and the lumen, depending on their solubility. Polyphenols are effectively concentrated within the interior of the exosome, ensuring maximum potency and targeted delivery.

2. THE ACTIVE INGREDIENT

Bakuchiol encapsulated in biomimetic exosome-like avocado

Bakuchiol is a vegan, antioxidant-rich ingredient derived from the **Psoralea corylifolia plant**. It reduces fine lines, wrinkles, and skin discoloration while soothing sensitive skin. Known for its anti-aging benefits, it restores firmness, evens skin tone, and improves texture.

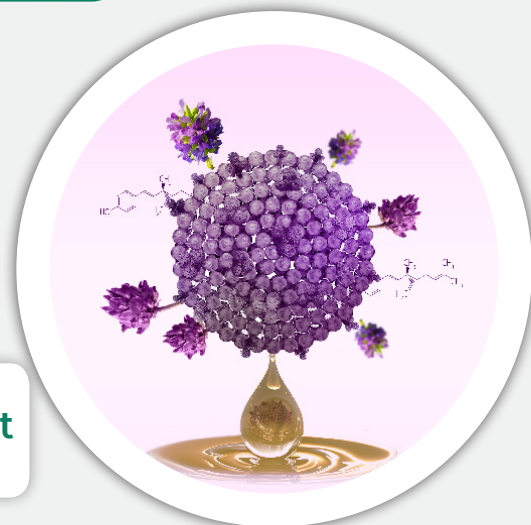
When bakuchiol is encapsulated in avocado exosomes, the exosomes act as a delivery system, enhancing bakuchiol's penetration into the skin. The avocado exosomes' regenerative properties, rich in proteins and lipids, promote cell communication and skin repair. This combination allows bakuchiol to work more effectively, soothing, reducing fine lines, and improving skin texture, while benefiting from the exosome's targeted delivery. This synergy ensures deeper nourishment, improved absorption, and better overall skin rejuvenation.

Anti-aging



Skin
rejuvenation

Nourishment

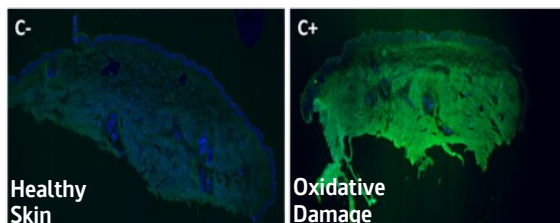




Ex-vivo Study - Aging Prevention, promoting long-lasting skin vitality

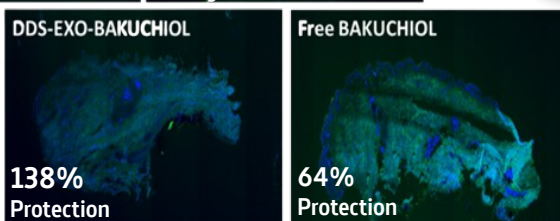
Reduce signs of aging

Protects Against Photoaging & Dark Spots



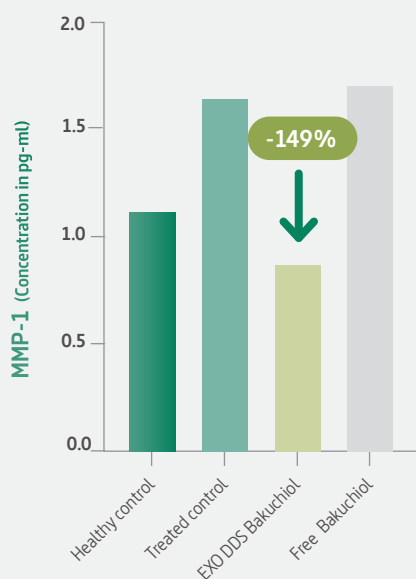
Maximizes skin's antioxidant potential to combat free radicals

The results demonstrate the superior antioxidant potential of DDS EXO Bakuchiol compared to free active. In this assay, green fluorescence intensity was used as an indicator of oxidative damage. Lower fluorescence corresponds to reduced oxidative damage, highlighting the efficacy of the antioxidant treatment.



DOUBLE PROTECTION
WITH EXO DDS BAKUCHIOL

Collagen Protection to Prevent Skin Damage



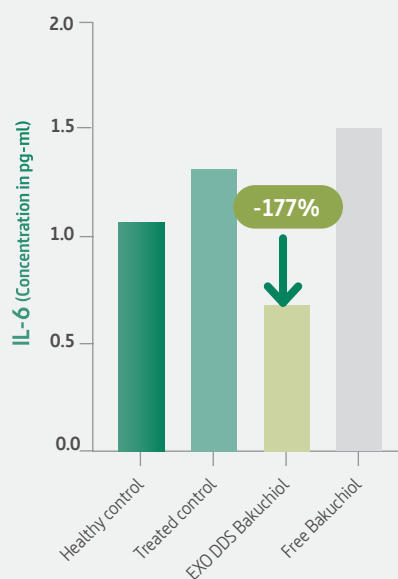
Prevents Premature Aging

Supports Skin Hydration

Our encapsulated bakuchiol treatment reduces MMP-1 (collagenase) production by 149%, an enzyme that breaks down collagen and contributes to skin aging. Unlike the regular form, this advanced formula helps protect and maintain your skin's youthful structure

Reduces Collagen Breakdown to keep Skin Strong and Smooth by 149%

Inflammation Reduction



Prevents Collagen Breakdown & Wrinkles

Enhances Skin Barrier Function

Reduces Redness & Uneven Tone

This chart shows the production of IL-6, a key molecule that triggers skin inflammation and accelerates aging. By targeting this pro-inflammatory signal, our product helps soothe irritation and promote healthier, younger-looking skin

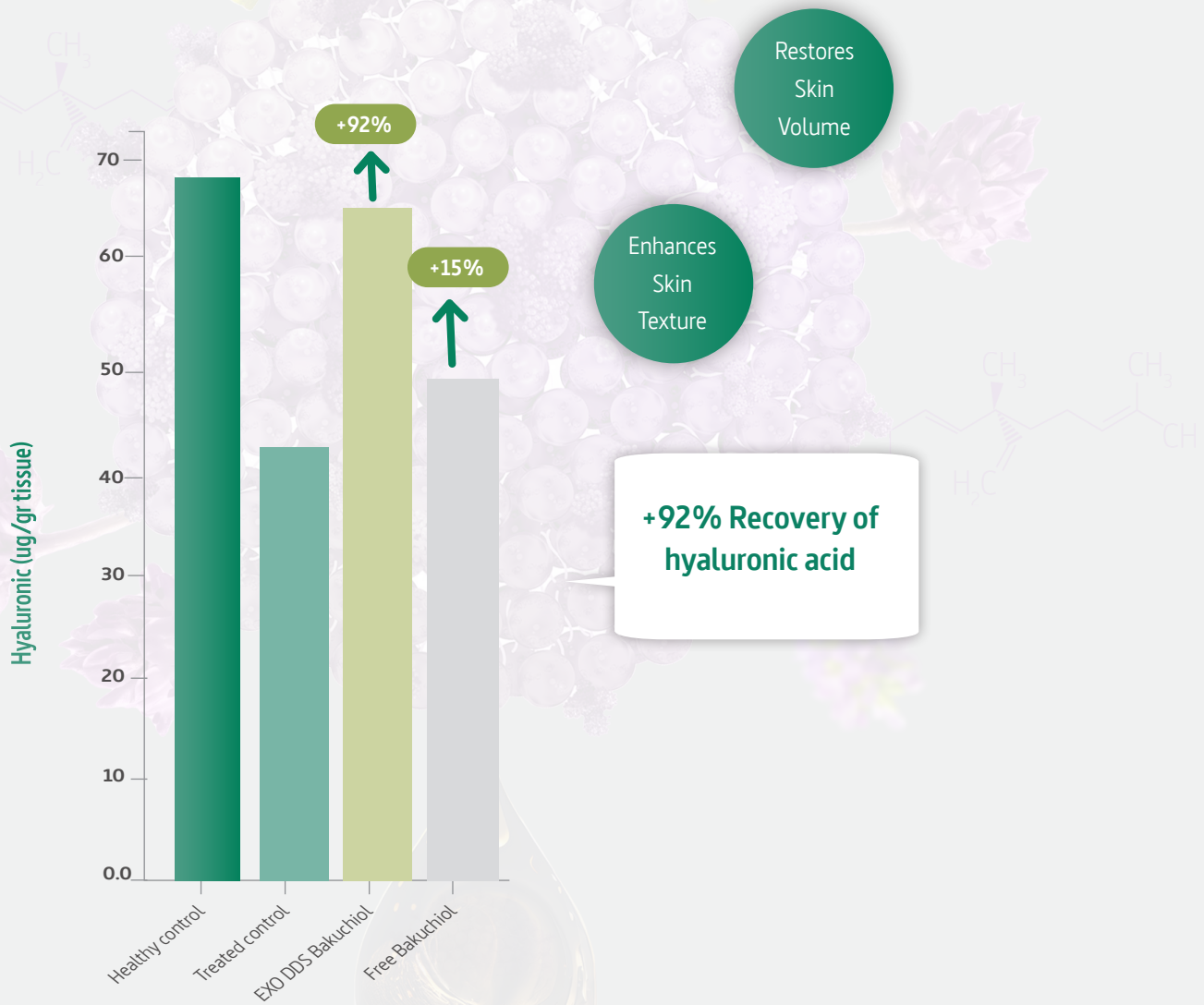
Reduces inflammation by 177%, helping your skin look smoother and more radiant

TWICE THE LASTING POWER: EXO DDS Bakuchiol maintains MMP-1 reduction for 72h, double the duration of free bakuchiol



Ex-vivo Study - Aging Prevention, promoting long-lasting skin vitality

- + Treatment with gel containing 5% VeganEXO DDS Bakuchiol
- + UV radiation exposure
- + 7 days consecutive application





3. THE EXOSOME-LIKE TECHNOLOGY

DDS encapsulation system

The active ingredients encapsulated in the **DEEP DELIVERY SYSTEM** are delivered specifically in the deepest layer of the epidermis for a more intense and precise effect on the structures and cells located there.

- + Protects active ingredients against degradation.
- + Maximum delivery of the active ingredient into the deep skin levels.
- + Gradual delivery for longer lasting effect.
- + Increases the bioavailability of the active ingredient.
- + Avoids colour changes in the cosmetic product.
- + Biomimetic nanovesicle with high moisturising and restorative skin.



**x20 MORE
PENETRATION**

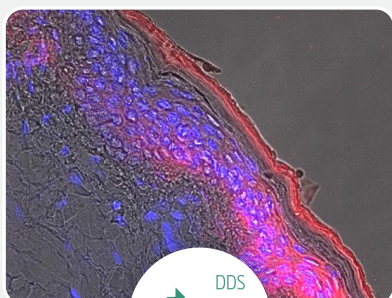


**SUSTAINED
DELIVERY**



**LOW
IRRITATION**

DEEP SKIN PENETRATION



The encapsulated active ingredients penetrate the skin quickly and safely, without undergoing changes in their molecular structure and thereby retaining their functionality at the point of delivery.

Greater amount of 100% functionally active ingredient in the specific location ensures exponentially improved results from the cosmetic formulations and increases your customer satisfaction too.



1 MILLION
MORE CONCENTRATED
THAN NATURAL
SOURCES

**HIGH
ENCAPSULATION
EFFICIENCY**

**PROTEIN
SURFACE
LOADED**

**PLANT
INSPIRED
DESIGN**

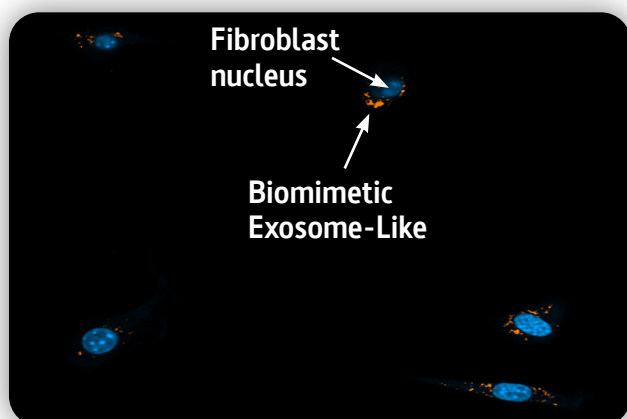
**CUSTOM
DESIGN**

**CELLULAR
AFFINITY**

**OUR BIOMIMETIC
EXOSOMES**



Cellular affinity

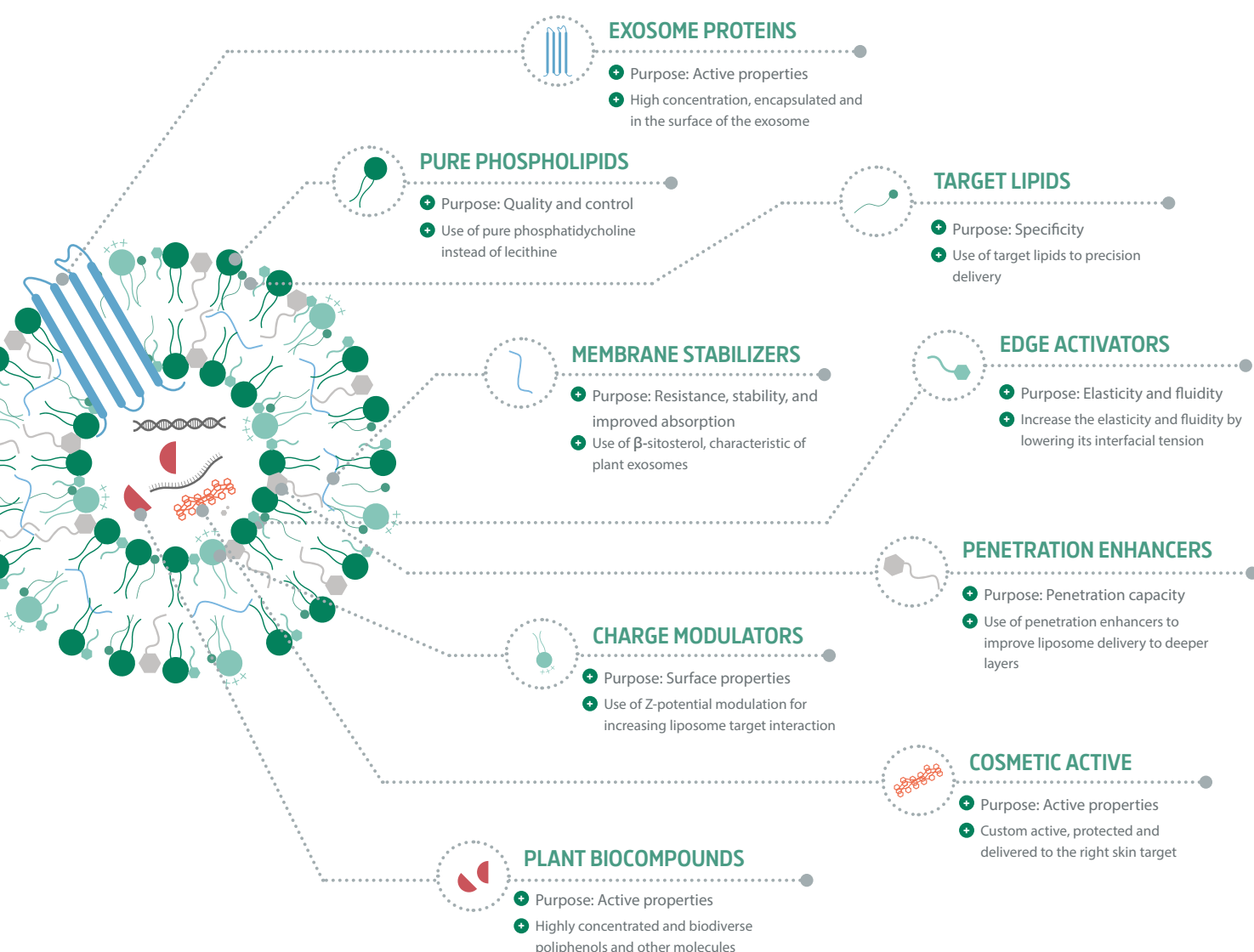


Exosome-like vesicles show cellular affinity as can be seen in the microscopy image in the right.

Here we can see a fibroblast where the cell nucleus is stained with DAPI (blue) and the Biomimetic Exosome-Like are labeled with rhodamin (red).

This image proves that the exosome-like vesicles specifically target cells acting effectively as communicators like natural exosomes.

Intrincated design of the delivery vehicle





Notes for formulators: how to use

- Shake before using.
- Let the product get room temperature before shaking. At low temperatures reversible changes in viscosity can occur.
- Add to bulk during the final phase of the production process, ensuring that the temperature does not exceed 40°C to avoid degradation of the encapsulated molecules. If you need to add it to higher temperatures, please consult our technical service.
- **Maximum homogenization:** 20.000 rpm
- **Formulation pH:** 3 – 11
- Ethanol concentrations higher than 15% may damage liposomes (contact our technical service for advice) Too high concentration of detergents may break liposomes.
- If you use them in a o/w formula, add them in aqueous phase.



Add at room temperature:

The liposome does not protect heat-sensitive actives from heat



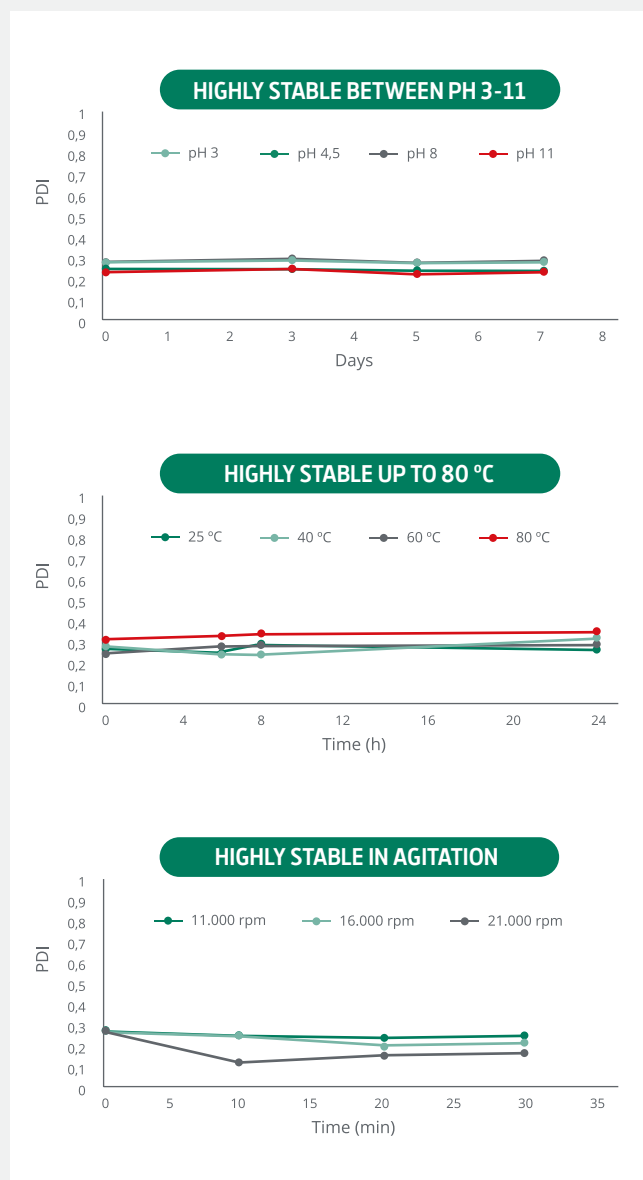
Liposomes can be added without any problem to any cosmetic mixture

- Water-based formulas
- Oil-in-water emulsions
- Water-in-oil emulsions
- Gels
- Serums



Important:

Add the liposomes in the **aqueous** phase of the emulsion or in the last stage of the manufacture process



Stability of the empty Delivery System nanovesicles in different conditions

OTHER DELIVERY SYSTEMS AVAILABLE



CORNEUM DELIVERY SYSTEM

The use of these superficial delivery systems substantially increases the concentration of the active ingredient in the stratum corneum, minimizing penetration at deeper levels. This is particularly useful in avoiding unwanted effects that can be caused at this level, for example when using active ingredients with a high irritant capability, like AHA.



FOLLICULAR DELIVERY SYSTEM

The "Follicular Delivery" nanovesicles vectorise the active ingredients to the deepest areas of the hair follicle in order to have the most powerful and selective effect on the germ cells, hair bulb, dermal papilla and sebaceous gland. They are ideal for hair loss and sebum regulating products.



HAIR DELIVERY SYSTEM

The "Hair Delivery" nanovesicles are formulated with cationic phospholipids and ceramides which give them high capillary adhesion and a considerable resistance to washing and rinsing. They progressively deliver the active ingredients to the hair stem cuticle, penetrating up to the cortex of the hair medulla, particularly when treating damaged hair.



CUSTOMISED PROJECTS

At INdermal, we are happy to place our processes, knowledge and collaboration at your entire disposal in order to provide you with an accessible and speedy nanobiotechnological service, as if it were an extension of your own R+D department. We also offer you any nanoencapsulation system that you may require for your formulations. We would be delighted to receive your ideas or proposals as well as carry out a preliminary analysis free of charge and in complete confidence.



Incorporate encapsulated active ingredients in your formulations and take your products to the next level of efficiency to surprise your customers and stand out from the competition.



**DOWNLOAD
CATALOGUE**



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