PHYTOVEC®

2024

LABORATOIRES ERIGER

New delivery system

Company providing cosmetics industry with **nanotechnology** derived from **pharmaceutical research**.

Laboratoires ERIGER; +33 247 864 475; contact@laboratoires-eriger.com ; www.laboratoires-eriger.com

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Encapsulation of active ingredients extracted from plants with the chlorophyll they contain.

TECHNOLOGICAL REVOLUTION

The universality and power of our technology make it adaptable across multiple sectors

FORMULABILITY FRIENDLY

HIGHER EFFICACY

BETTER STABILITY

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The stability of active ingredients in cosmetics is a major challenge for the industry. Some actives are sensitive to various environmental factors and can lose their efficacy over time.

STABILITY

OXIDATION

Active ingredients such as vitamins (C and E), retinoids and polyphenols are sensitive to oxygen and can degrade rapidly.

LIGHT-INDUCED DEGRADATION

Some active ingredients, such as retinol and vitamin A derivatives, degrade when exposed to UV light. This degradation can reduce their efficacy or even make them irritating to the skin.

TEMPERATURE

Changes in temperature can degrade active ingredients such as vitamins (A, C and E), polyphenols or certain botanical extracts, affecting their biological activity.

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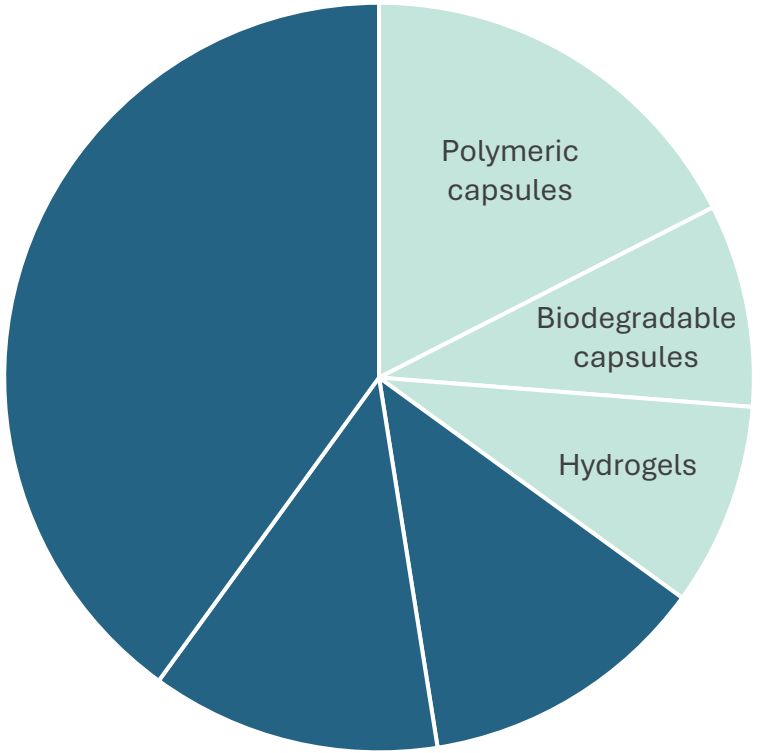
DELIVERY SYSTEM ON THE MARKET



Microencapsulation

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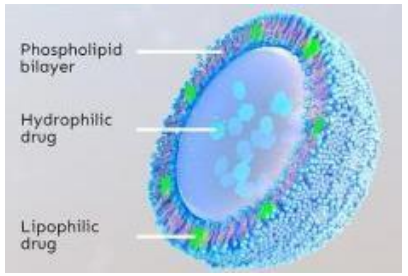
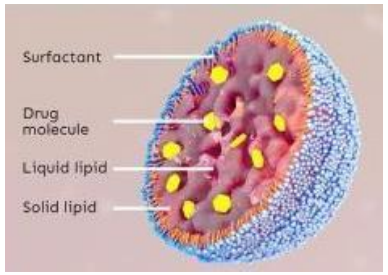
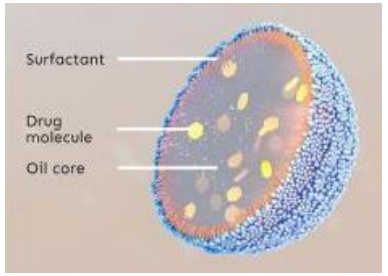
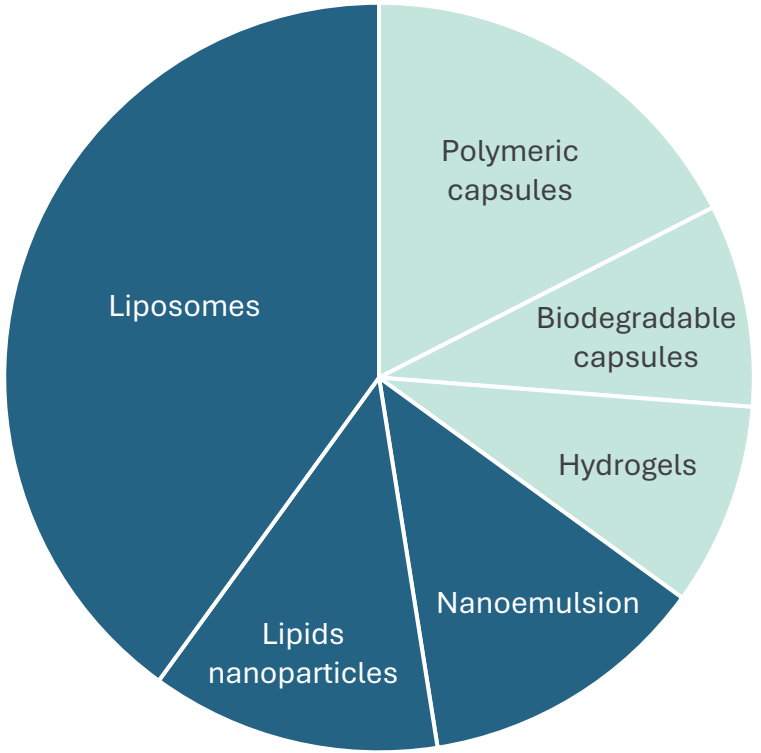
DELIVERY SYSTEM ON THE MARKET

Nanoparticle system

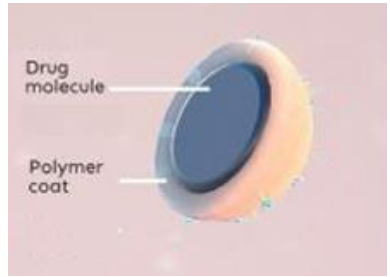


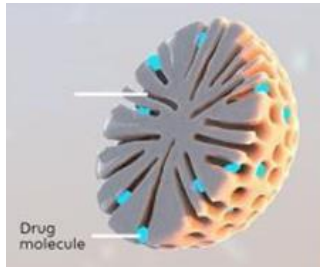


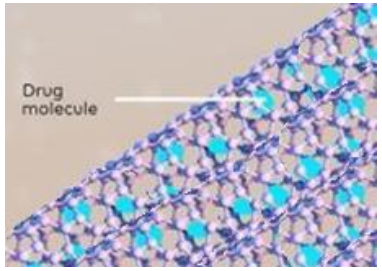




Microencapsulation







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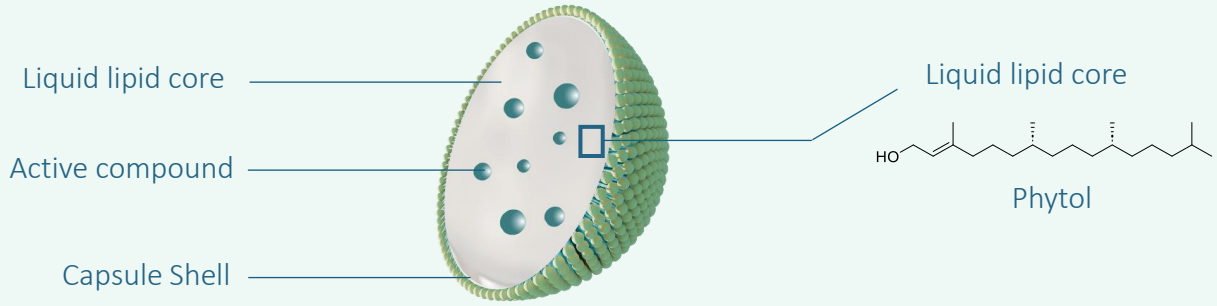
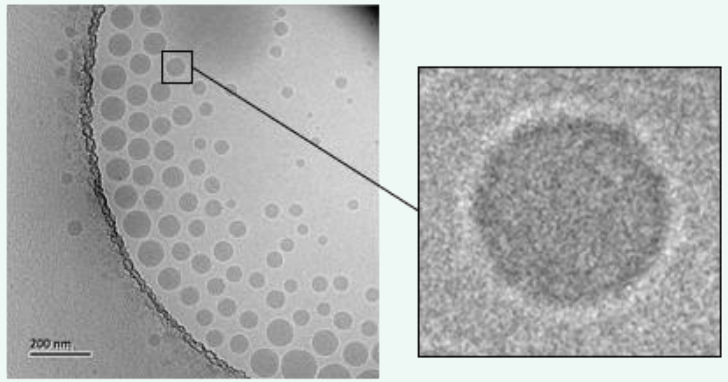
PHYTOVEC® TECHNOLOGY

NANOPARTICLE SYSTEMS

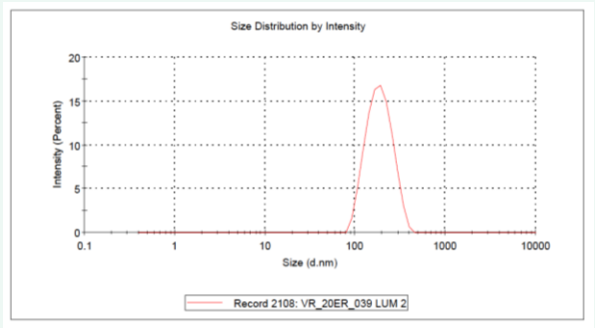


CAPSULE BY CRYOTEM



CryoTEM picture of Phytovec® capsules

CAPSULES BY DLS



Nanoparticles size of PhytoVec®- Vit A 10% obtained by DLS

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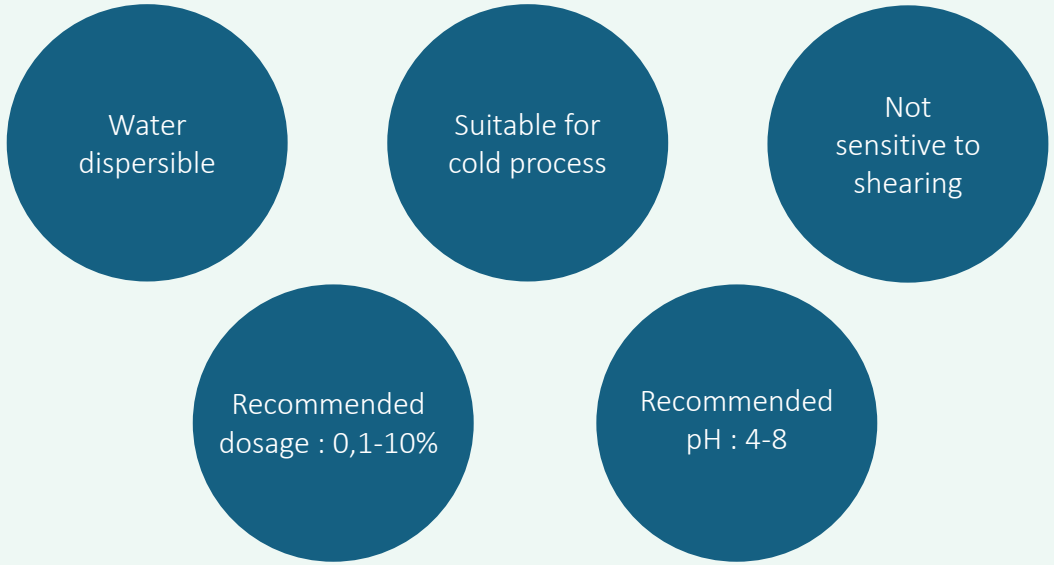
FORMULABILITY

FORMULATION



STORAGE

Recommended :
In the unopened original container sealed under nitrogen, in a dry place, temperature 15-25°C, protected from light.

INGREDIENTS COMPATIBILITY

INGREDIENT	COMPATIBILITY
Ethanol	10%
Glycerin	10%
Propanediol	3%
Behenyl Alcohol	2%
Phenoxyethanol	1%
Ethylhexylglycerin	1%
Citric acid	1%
Sodium lauryl sulfate	1%
Polysorbate 80	0,5%
Tween 20	0,5%
Sodium Stearoyl Glutamate	0,3%
Hydrogenated lecithin	0,3%
Cetyl phosphate	0,1%

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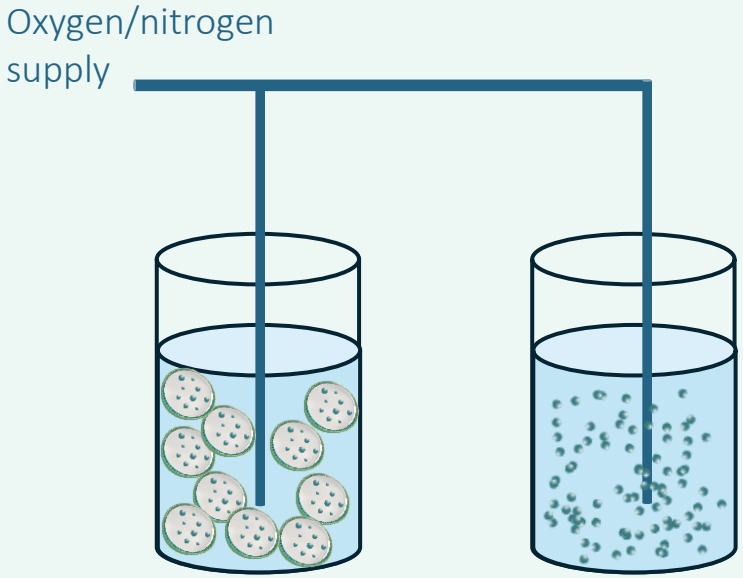
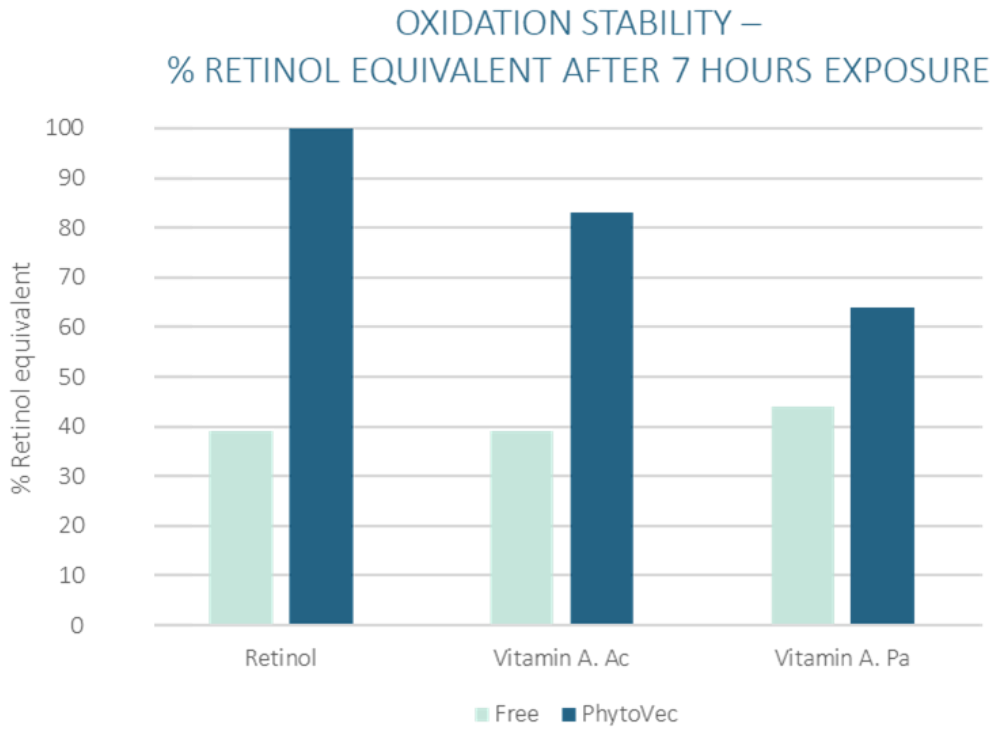
OXIDATION STABILITY *with PhytoVec®*

PROTOCOL

Samples are exposed to an air flow during 7 hours. The stability was monitored by HPLC. Temperature was controlled during experiment to remain below 20°C.





Air-accelerated oxidation

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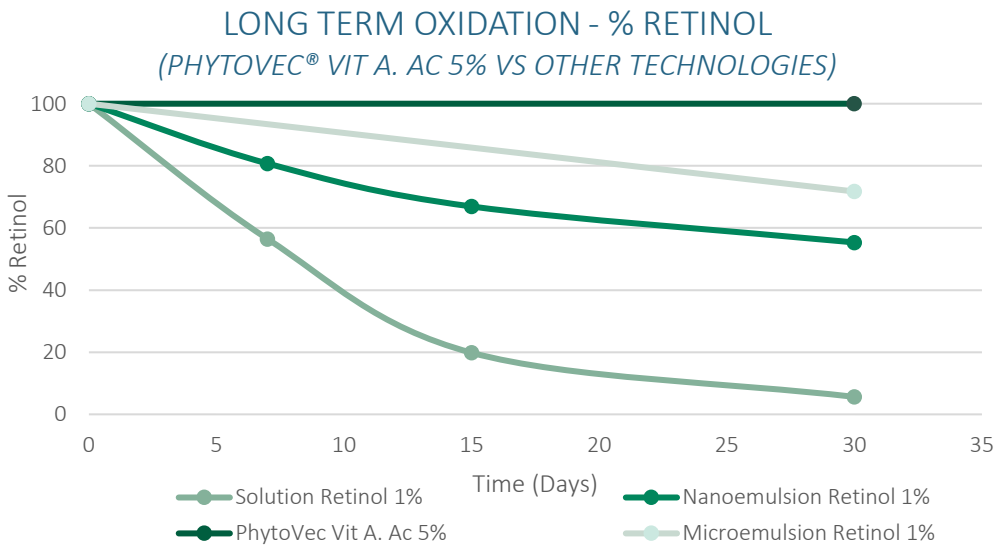

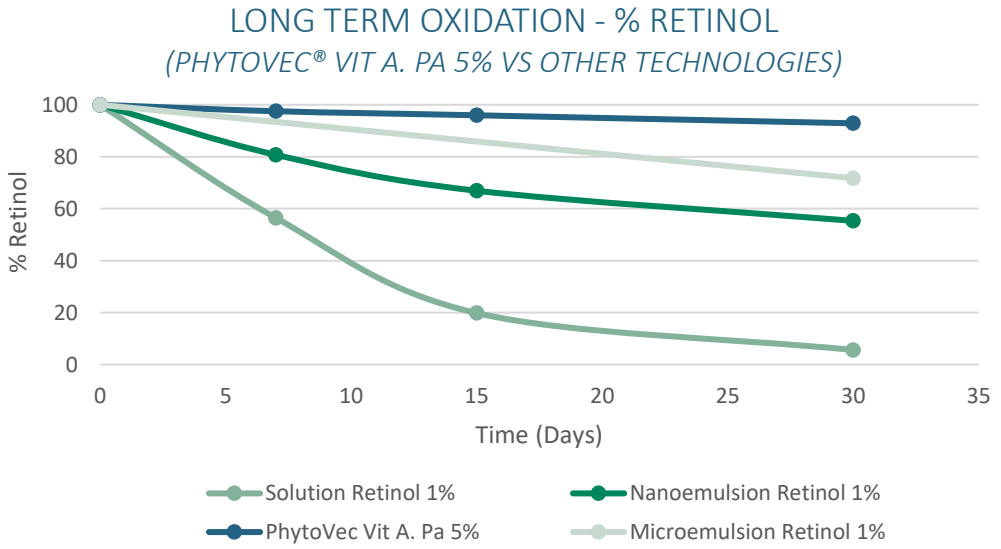

LONG TERM OXIDATION *with PhytoVec®*

PROTOCOL

Samples are stored for 30 days in the dark and at room temperature. The stability was monitored by HPLC.

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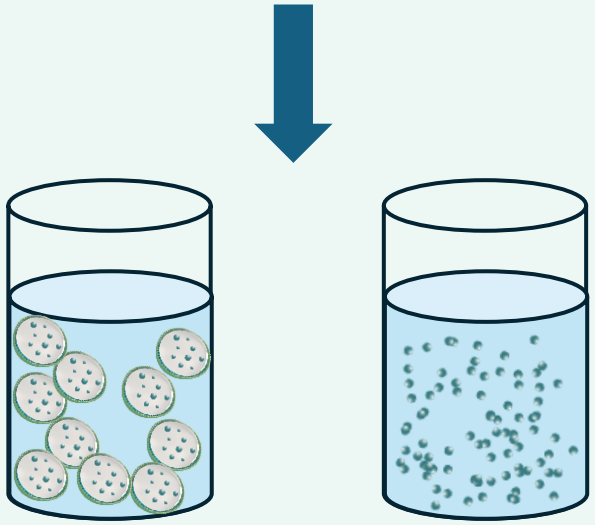
LIGHT-INDUCED DEGRADATION *with PhytoVec®*

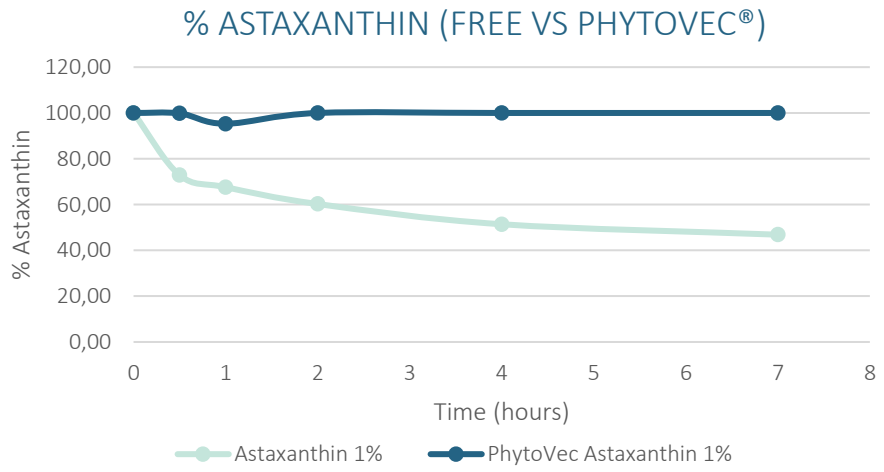
PROTOCOL

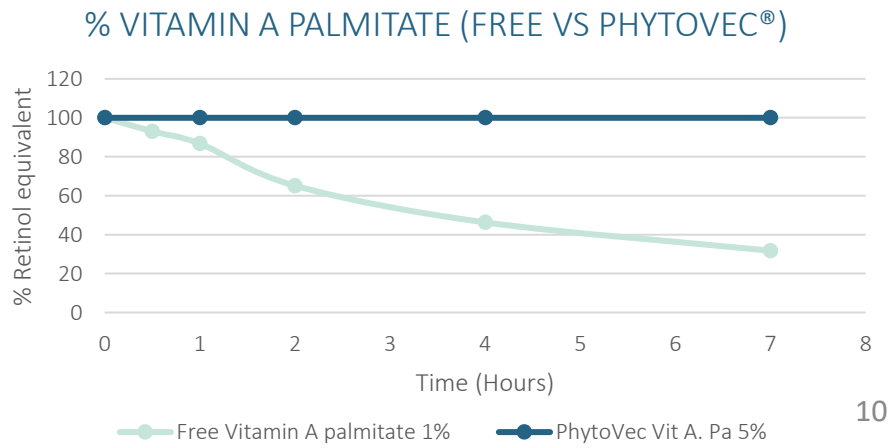
Samples are exposed to UV 285 µw/cm² during 7 hours. The stability was monitored by HPLC. Temperature was controlled during experiment to remain below 15°C.

UV 285 µw/cm²



UV-ACCELERATED OXIDATION



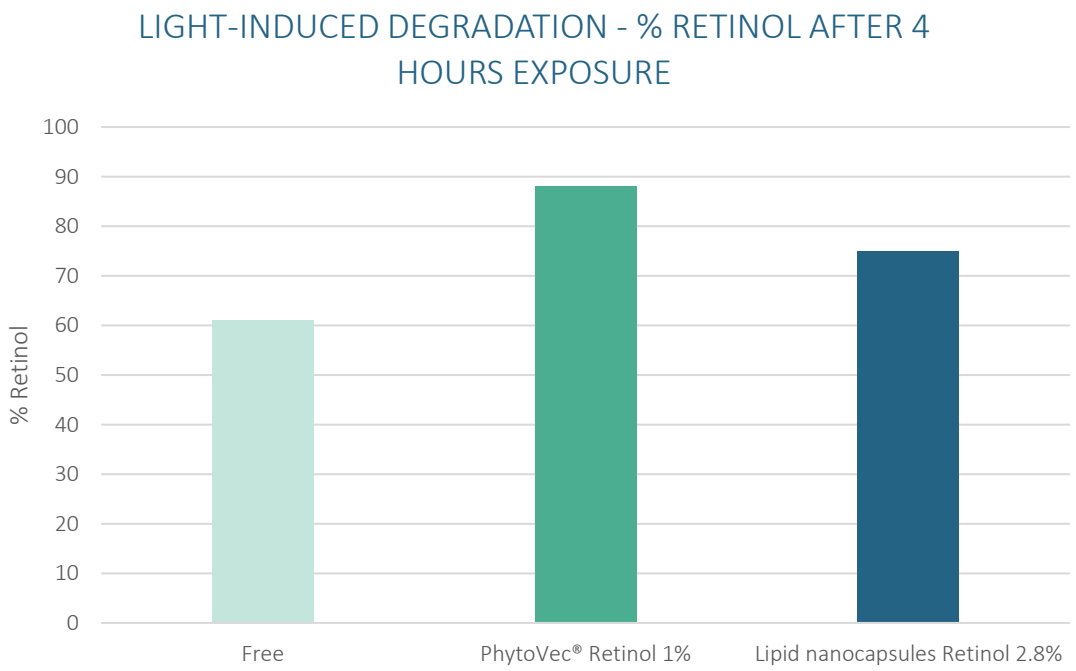


LABORATOIRES ERIGER
New delivery system

LIGHT-INDUCED DEGRADATION *with PhytoVec®*

PROTOCOL

Samples are exposed to UV 285 µw/cm^2 during 4 hours. The stability was monitored by HPLC. Temperature was controlled during experiment to remain below 15°C.



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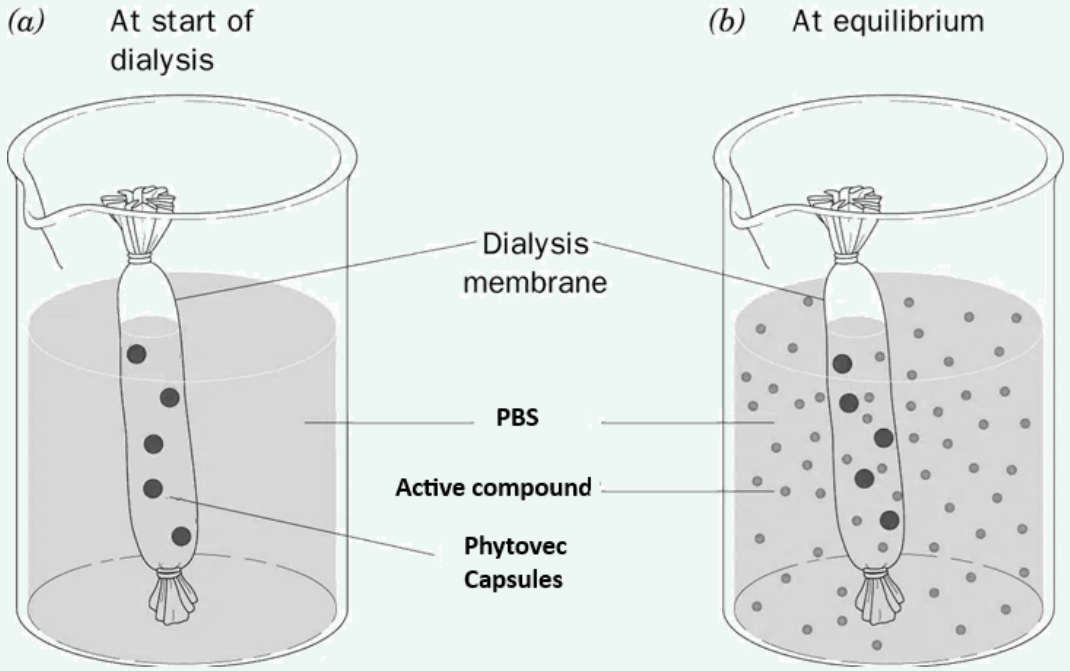
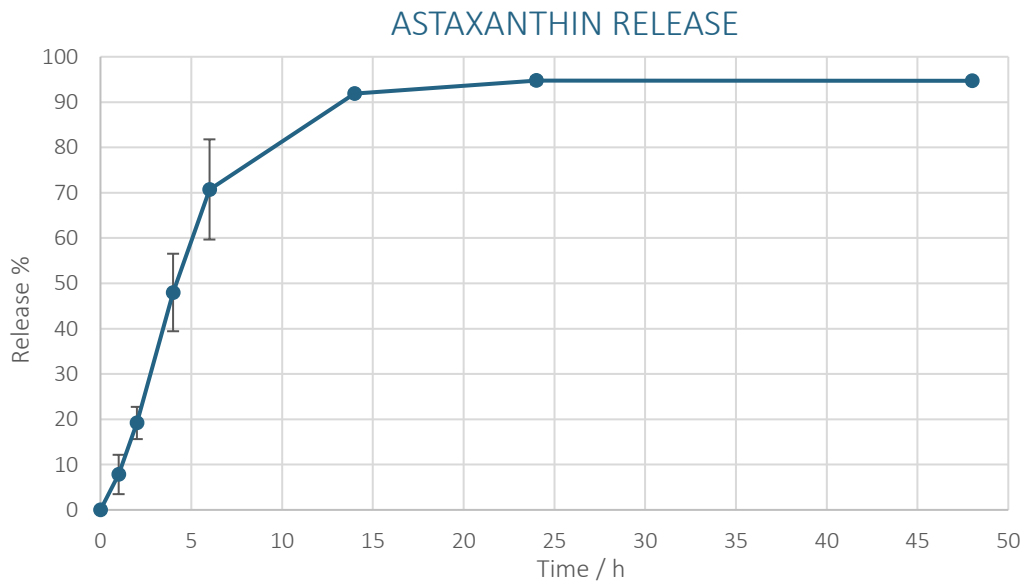
CONTROLLED RELEASE *with PhytoVec®*

PROTOCOL

A PhytoVec® product was placed in a dialysis bag immerged in a buffer bath at 37 °C. At predetermined time intervals, the concentration of active compound was monitored by LCMS.





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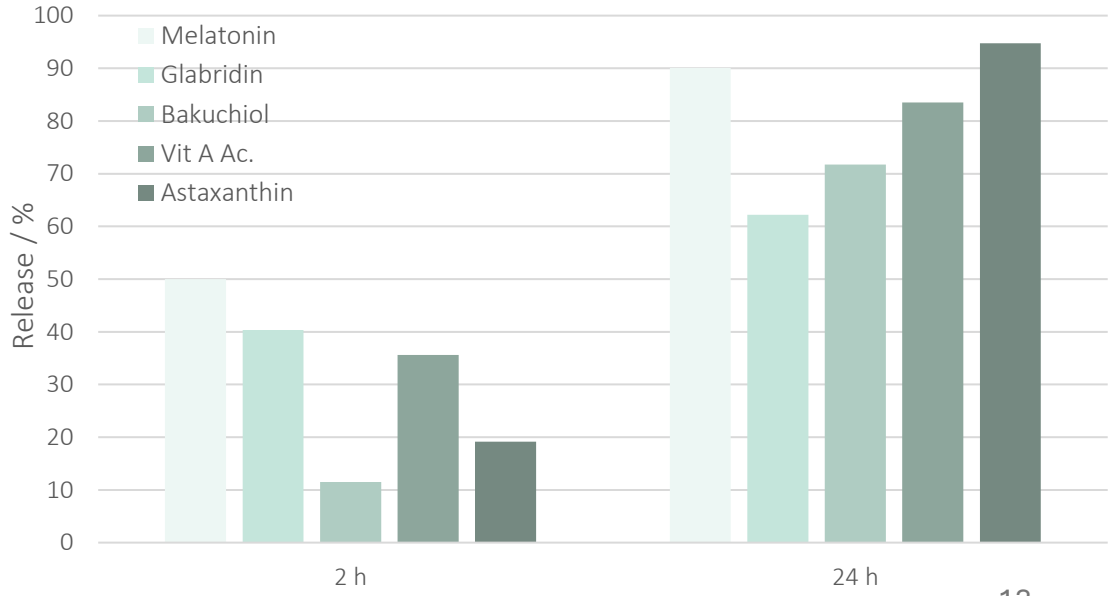
CONTROLLED RELEASE *with PhytoVec®*

KEY POINTS

- PhytoVec® technology enables **controlled release** of active ingredients
- Total release of the active ingredient is generally obtained after **24 hours** in a cell medium
- Controlled release **limits irritation** and **maximizes product efficacy**

RELEASE PROFILE OF DIFFERENT PHYTOVEC®



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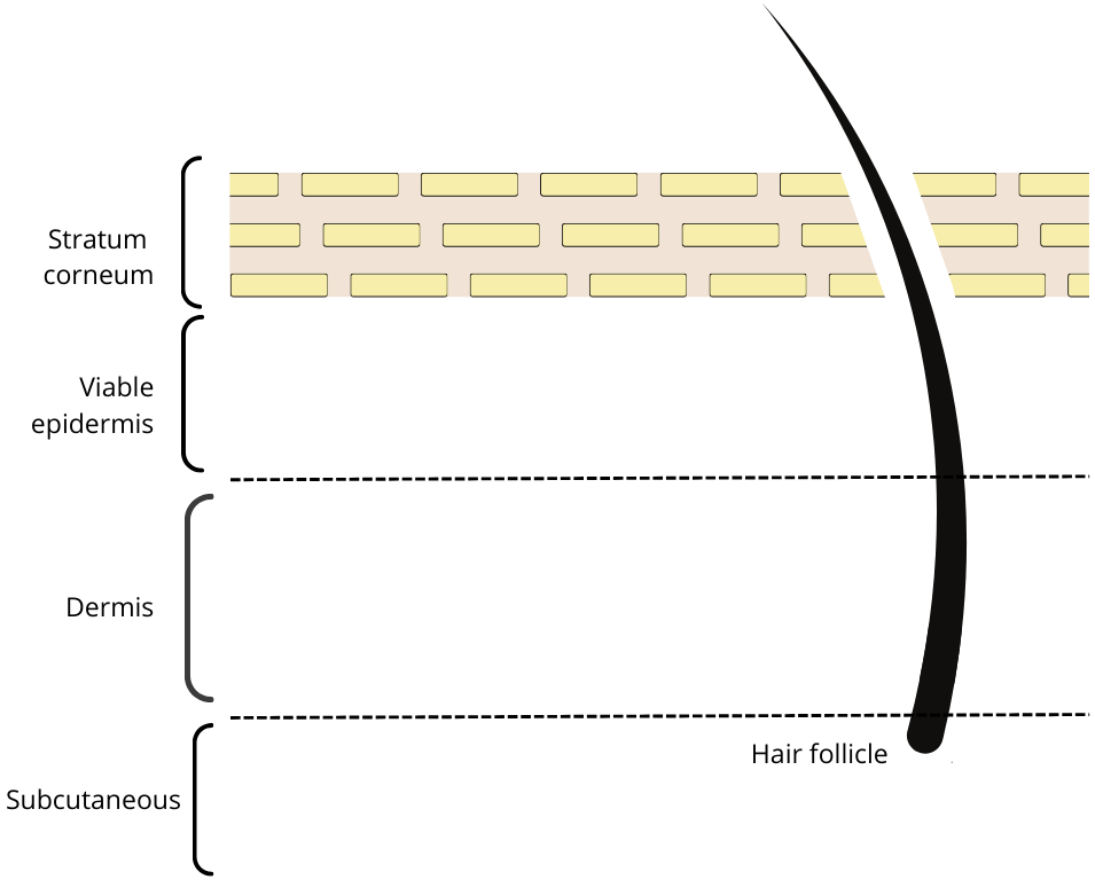
SKIN PENETRATION *with PhytoVec®*



KEY POINTS

- Skin penetration is a complex process involving numerous phenomena
- The Stratum corneum usually plays an important barrier role
- Access to the epidermis or dermis is often necessary for efficacy

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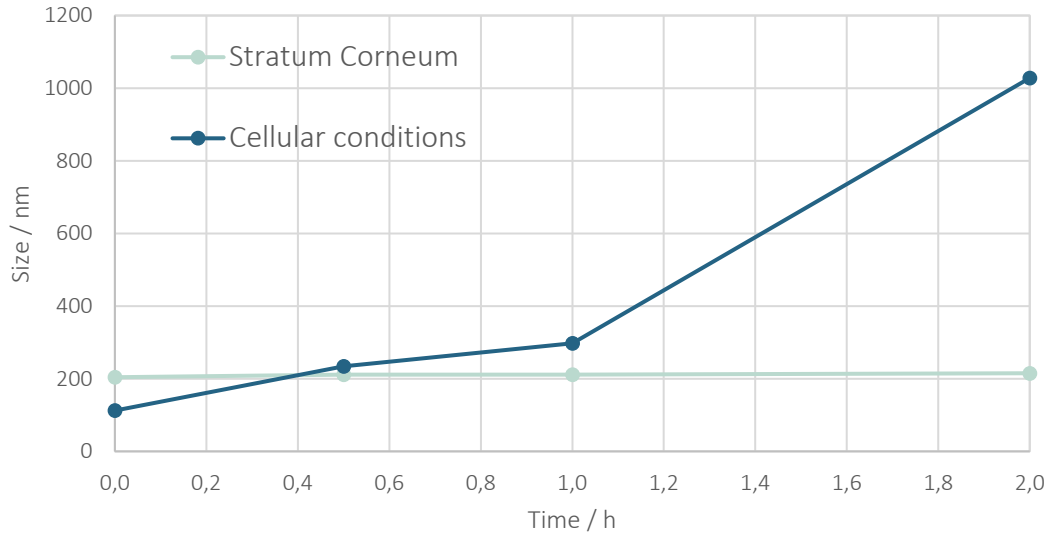
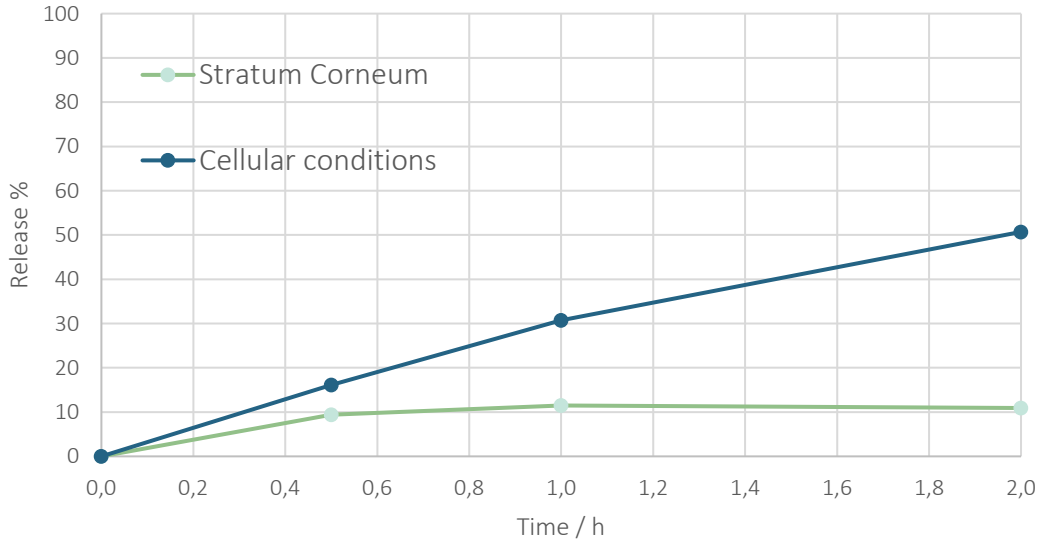
SKIN PENETRATION *with PhytoVec®*

SIZE EVOLUTION OF PHYTOVEC® IN BIOLOGICAL CONDITIONS



RELEASE PROFILE OF PHYTOVEC® IN BIOLOGICAL CONDITIONS



PROTOCOL

Stratum Corneum: Phytovec® was incubated at 37 °C with a mixture of relevant skin chemicals namely: ceramides, cholesterol and fatty acid.

Cellular conditions: Phytovec® was incubated in PBS (pH 7,4) at 37 °C under slow stirring.

At predeterminated time intervals, the size of the Phytovec® was measured with a nanosizer apparatus

KEY POINTS

- The capsules remain **stable** in the **stratum corneum**
- The capsules **gradually release** the active ingredient in the cells

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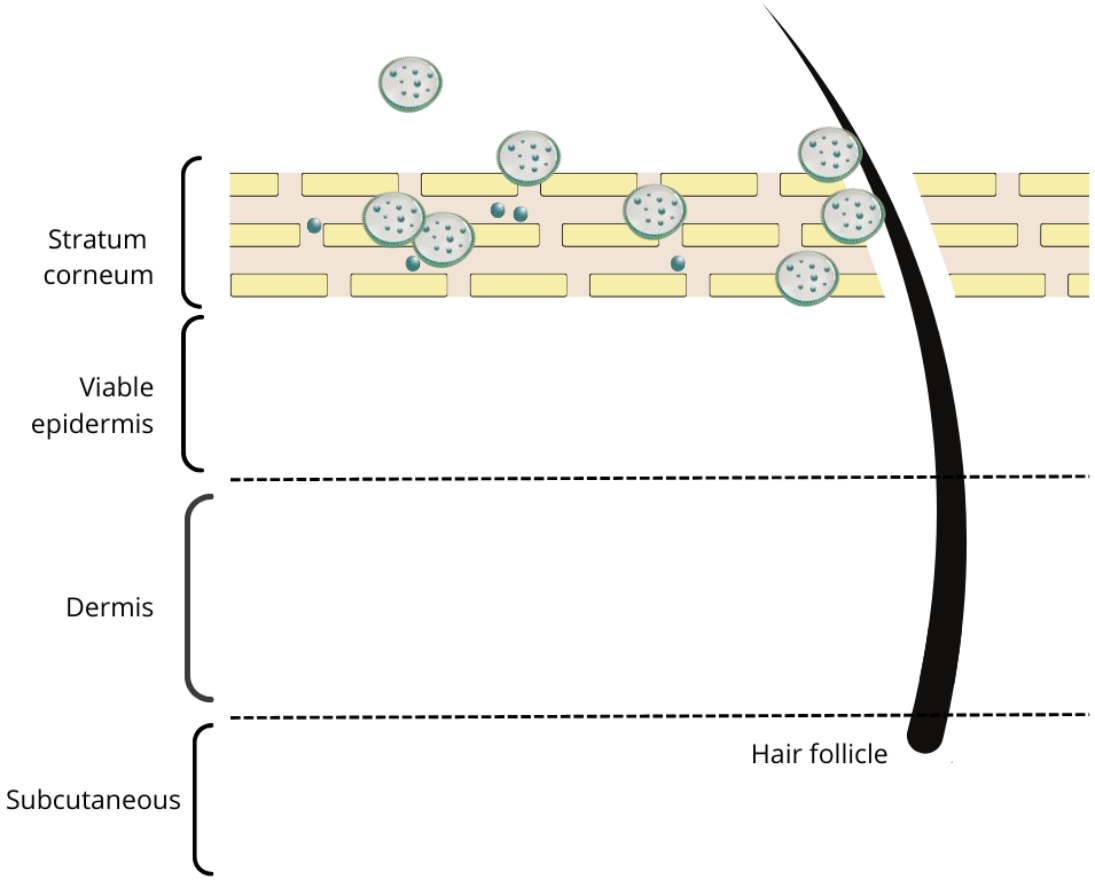
SKIN PENETRATION *with PhytoVec®*



1 CAPSULES ACCUMULATE IN THE STRATUM CORNEUM

The capsules remain stable and the stratum corneum acts as a reservoir for controlled release.

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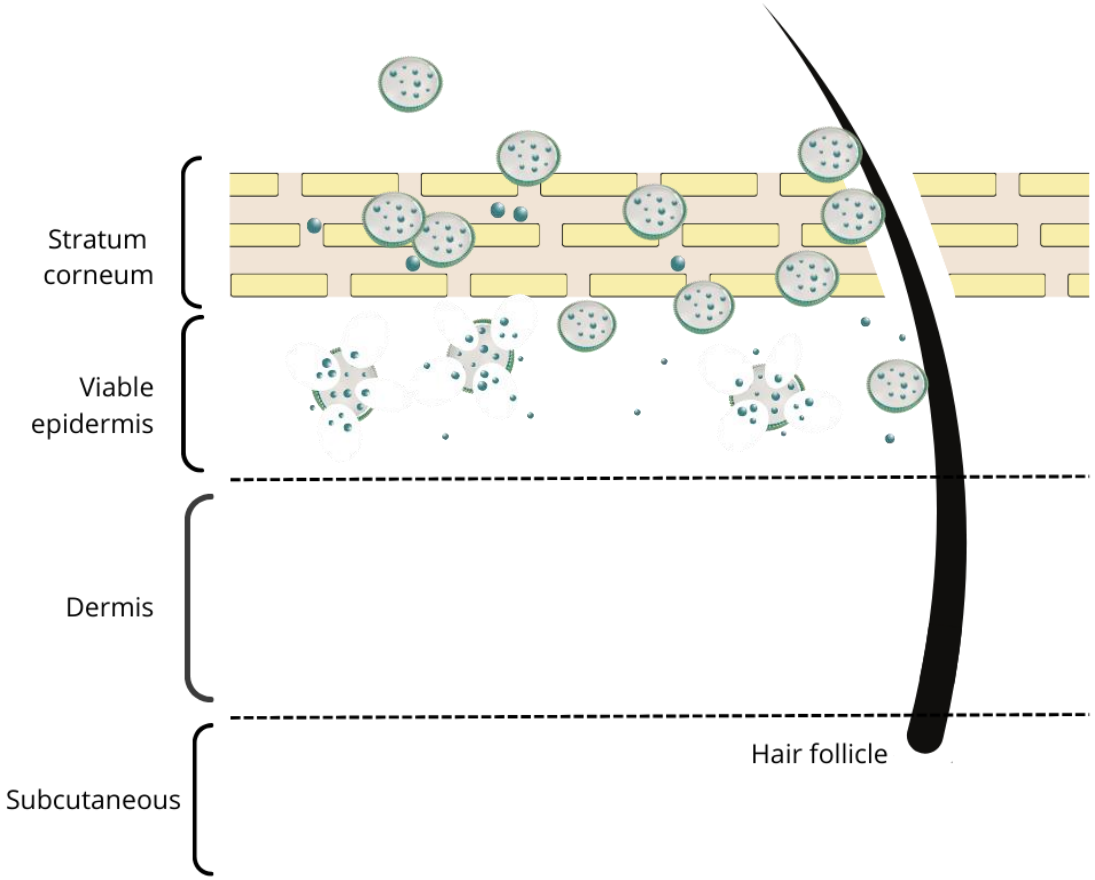
SKIN PENETRATION *with PhytoVec®*



1 CAPSULES ACCUMULATE IN THE STRATUM CORNEUM

The capsules remain stable and the stratum corneum acts as a reservoir for controlled release.

2 CAPSULES DEGRADE RELEASE THE ACTIVE COMPOUND

Once in the epidermis, the capsules gradually release the active ingredient through diffusion and degradation of the capsule.

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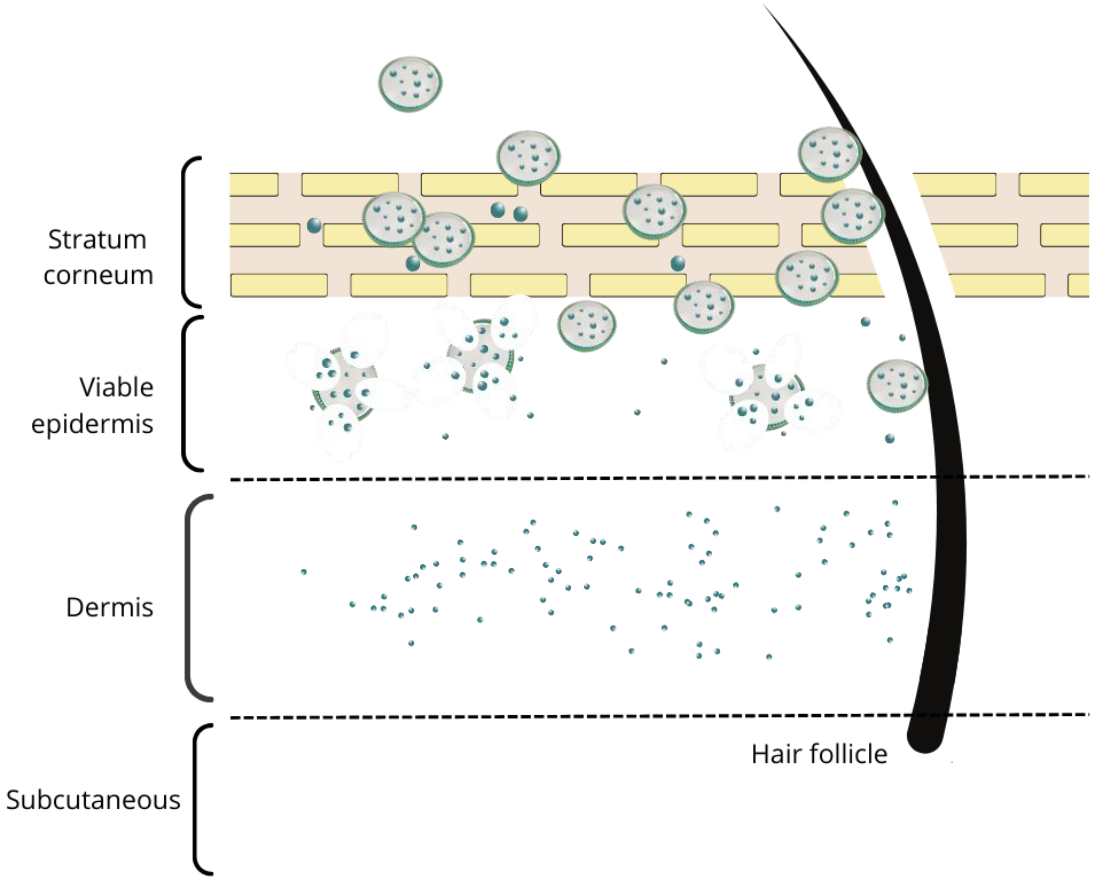
SKIN PENETRATION *with PhytoVec®*



1 CAPSULES ACCUMULATE IN THE STRATUM CORNEUM

The capsules remain stable and the stratum corneum acts as a reservoir for controlled release.

2 CAPSULES DEGRADE RELEASE THE ACTIVE COMPOUND

Once in the epidermis, the capsules gradually release the active ingredient through diffusion and degradation of the capsule.

3 THE FREE ACTIVE COMPOUND REACHES THE DERMIS

Once released from the capsule, the active ingredient diffuses into the epidermis and dermis.

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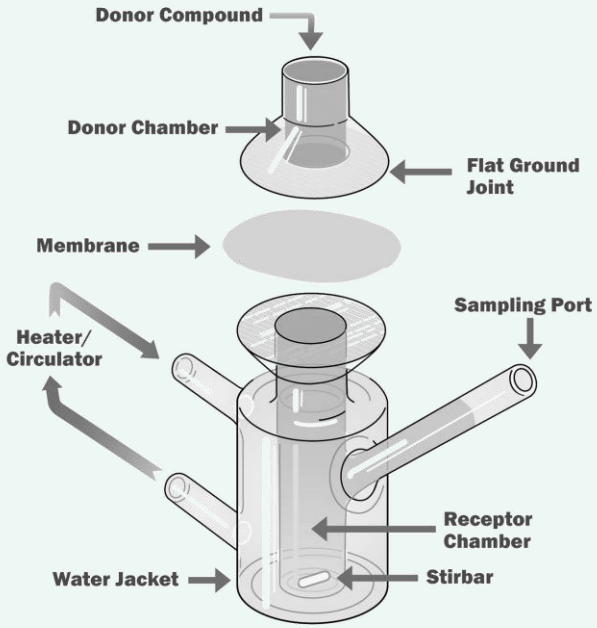
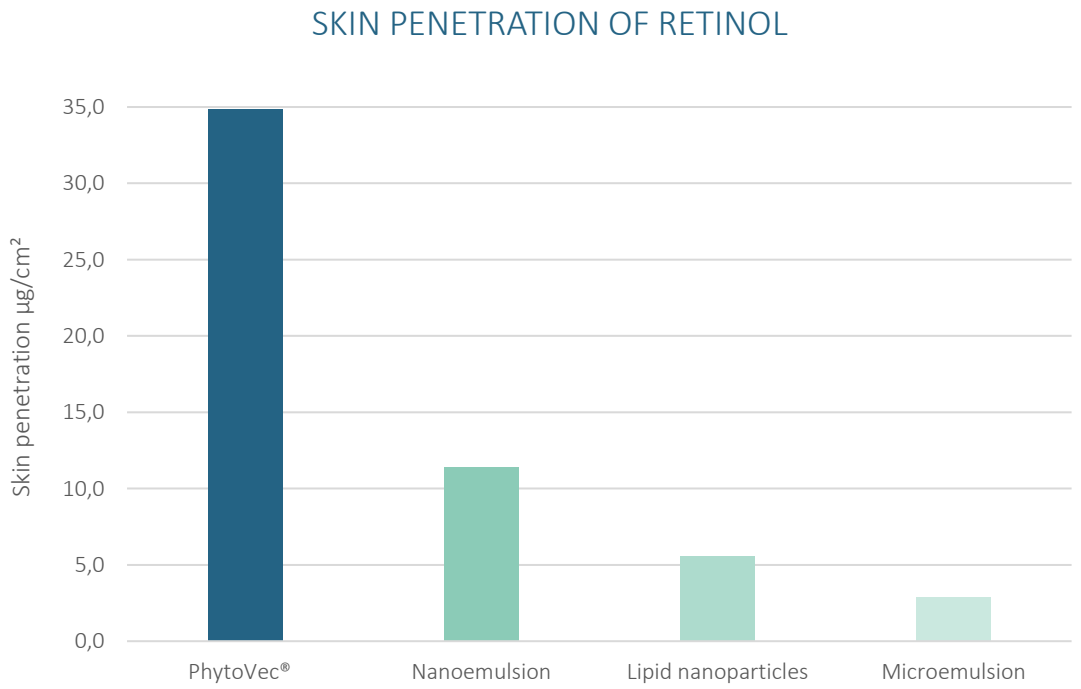
SKIN PENETRATION *with PhytoVec®*

PROTOCOL

Human skin disk was mounted on a Franz cell apparatus at 32 °C. After 24 h of exposure, concentration of active compound within the skin was measured with LCMS analysis.





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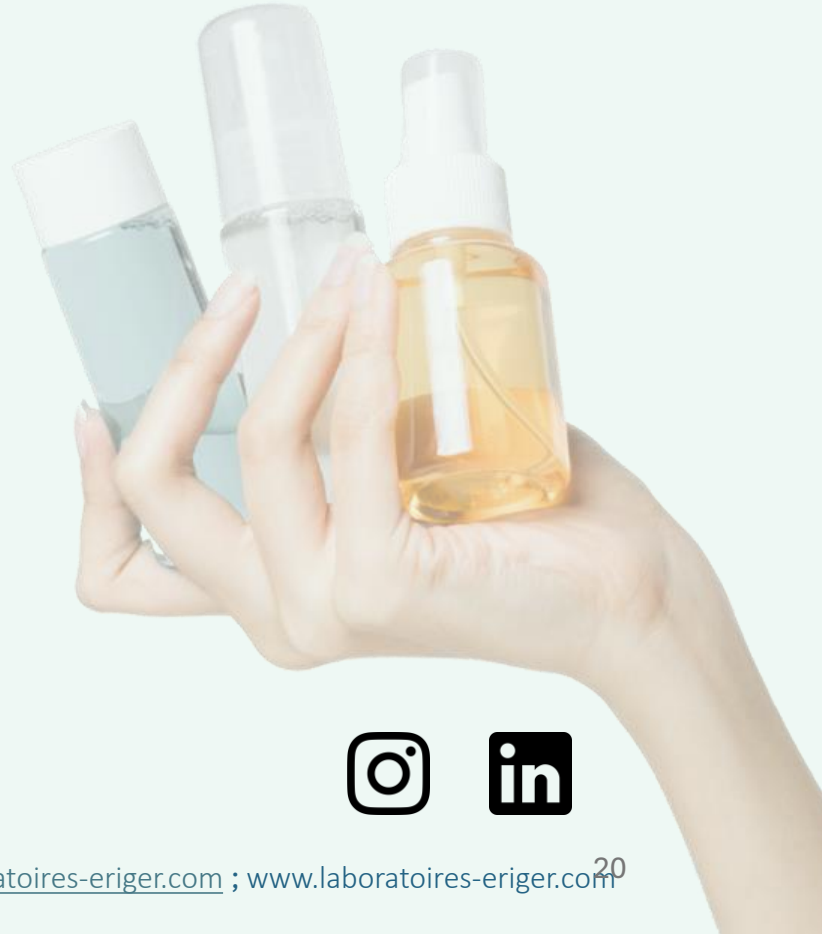
THANK YOU FOR YOU ATTENTION



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