

# EXO FDS AZELAIC FUSION

Deep Delivery Nanovesicles with  
2% Azelaic acid and 0.50% Herbal extract

EXO FDS Azelaic Fusion\_01

FDS



~1000  
LESS CFU OF  
*Cutibacterium  
acnes*



asi  
accredited  
ASI-ACC-056



Nanodermal  
by Nanovex Biotechnologies

# EXO FDS AZELAIC FUSION

**Code:** 20422

## Description:

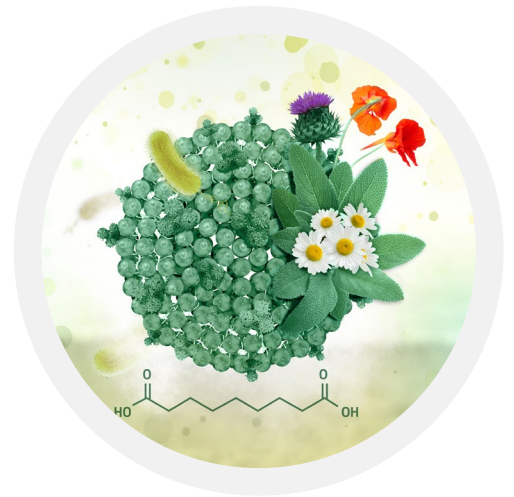
AZELAIC ACID (2 %) and HERBAL EXTRACT (0.50 %) encapsulated in vegan follicular release biomimetic exosomes (FDS - Follicular Delivery System) to add in cosmetic, cosmeceutical or dermo pharmaceutical formulations.

## INCI:

AQUA, PROPANEDIOL, GLYCERIN, PHOSPHATIDYLCHOLINE, MANNITOL, AZELAIC ACID, POTASSIUM SORBATE, ETHYLHEXYLGLYCERIN, BETA-SITOSTEROL, SORBITAN OLEATE, CHAMOMILLA RECUTITA EXTRACT, SALVIA OFFICINALIS LEAF EXTRACT, TROPAEOLUM MAJUS EXTRACT, ARCTIUM LAPPA ROOT EXTRACT, CETRIMONIUM CHLORIDE, PHYTOSPHINGOSINE

**Appearance:** White. Liquid

**Preservatives:** PROPANEDIOL, ETHYLEXYLGLYCERIN AND POTASSIUM SORBATE



## APPLICATIONS



Skin care  
Balance



Body care

· Acne · Antimicrobial activity ·

## CLAIMS

Aprox 1000 times less CFU of *Cutibacterium acnes* (according to efficacy study)



1-10%  
RECOMMENDED DOSAGE



98.5%  
NATURAL ORIGIN\*

x MILLION  
EXOSOME  
CONCENTRATION

A million times more  
concentration than natural  
exosome sources

[NANO  
FREE]

150-300 nm  
AVERAGE SIZE



Readily  
Biodegradable\*\*



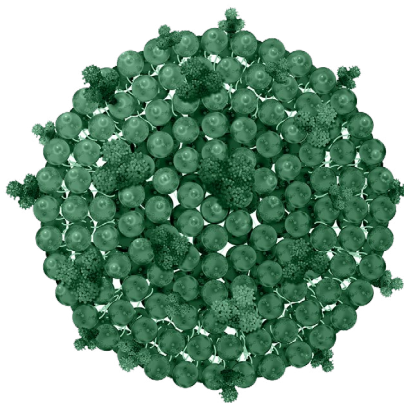
\*  
According to ISO 16128.

\*\*  
According to OECD criteria. The biodegradability of this product is calculated from the accumulated biodegradability data of the individual constituents used in the manufacture of this product.

\*\*\*  
According to patch test

## Certifications





## EXO FDS Delivery System

Exosomes, natural lipid vesicles facilitating cell communication, are harnessed in cosmetics for their ability to modulate physiological processes, mimicking intercellular communication. Biomimetic Exosomes combine ancient plant extracts rich in biocompounds with cutting-edge delivery technology, marking a cosmetic revolution. Follicular Delivery bioexosomes transport active ingredients into the hair follicle.

### BENEFITS ENCAPSULATION IN BIOEXOSOMES

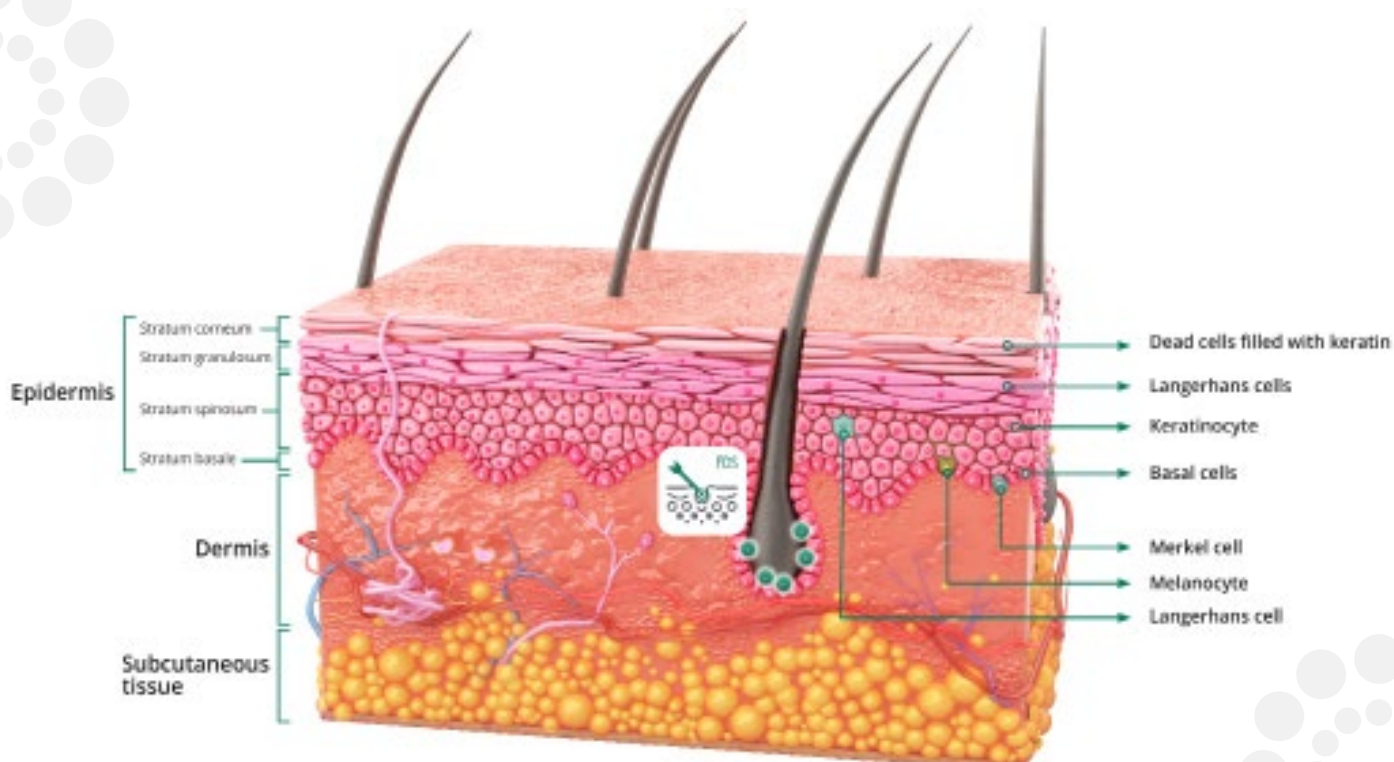
- ✔ Protects against degradation caused by pH or interaction
- ✔ Delivery of the active ingredient to the interior of the hair follicle which optimises its access to the sebaceous gland
- ✔ Non-invasive penetration and specific delivery
- ✔ A million times more concentration than natural sources
- ✔ Cellular affinity
- ✔ Surface loaded proteins

## Active encapsulated

Plant extracts, along with azelaic acid, offer a comprehensive solution for acne-prone skin. Azelaic acid regulates cell turnover, reducing acne formation and inflammation. Chamomile soothes irritation, sage calms swelling, and nasturtium stimulates collagen production for skin repair. Burdock detoxifies, aiding in acne clearance. Together, these ingredients create a holistic approach to clearer, healthier skin.

### ACTIVE INGREDIENTS PROPERTIES

- ✔ Regulates cell turnover reducing acne and inflammation
- ✔ Soothes irritation and redness
- ✔ Possesses anti-inflammatory properties to calm swelling associated with acne breakouts
- ✔ Stimulates collagen production for skin repair
- ✔ Acts as a detoxifying agent
- ✔ Protects the skin against free radicals and environmental damage



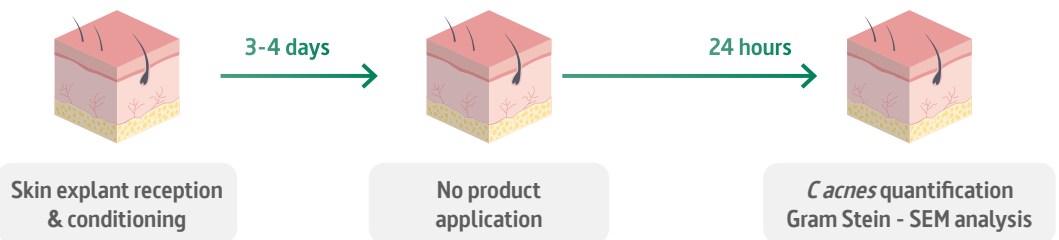




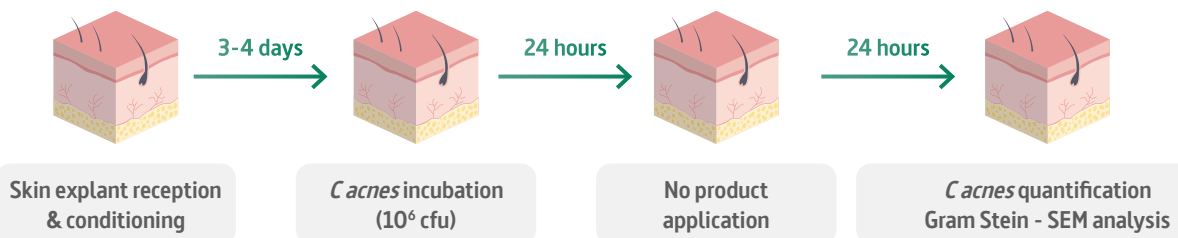
## Proven efficacy

- + Gel with 10% EXO FDS Azelaic Fusion
- + Human organotypic skin explant cultures
- + A total of  $1.5 \times 10^6 - 5 \times 10^6$  CFU of *Cutibacterium acnes* in was inoculated and kept for 48 hours
- + Application of the product on top  $8 \pm 2 \mu\text{L}/\text{cm}^2$  using a micropipette
- + A quantitative measurement of *C. acnes* was determined by counting the number of grown Colony Forming Units (CFU) on plates after incubation to determine prevention and elimination function activity.

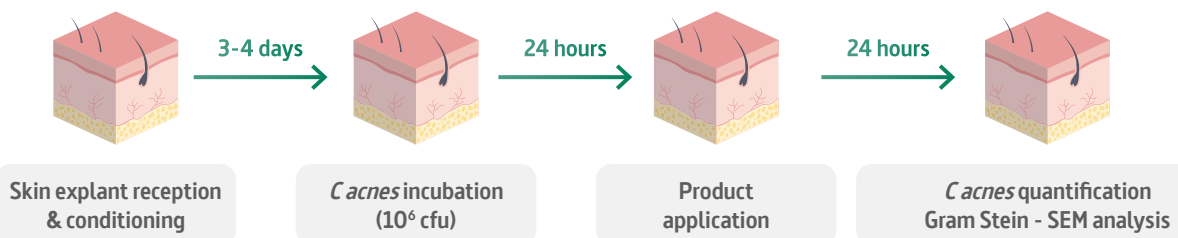
### POSITIVE CONTROL: Skin samples without *C. acnes* and without product (6 skin replicates)



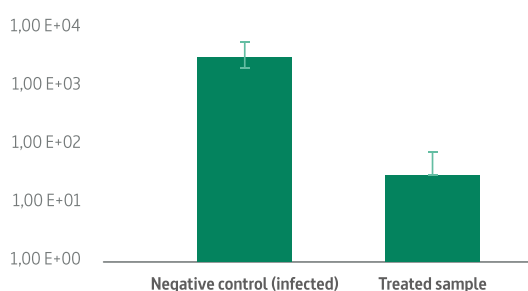
### NEGATIVE CONTROL: Skin samples with *C. acnes* and without product (6 skin replicates)



### TREATED SAMPLE: Skin samples inoculated with *C. acnes* and thereafter product treatment (6 skin replicates)

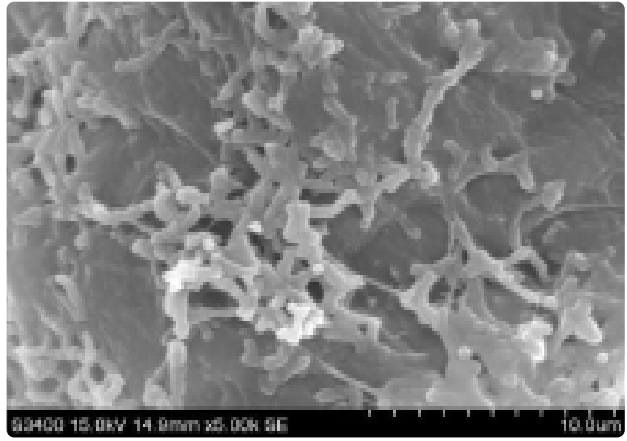
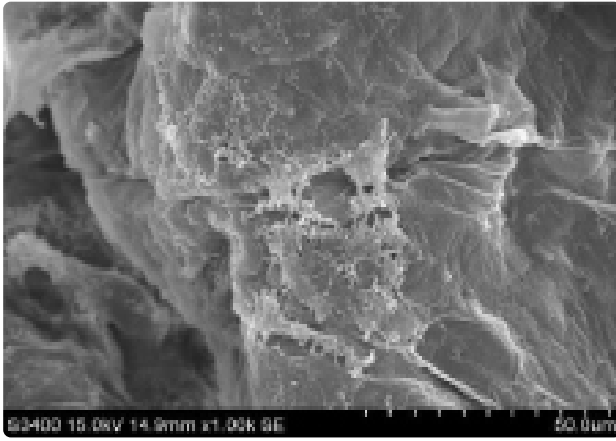


*C. acnes* CFU values measured in Antibacterial Efficacy with tested Products

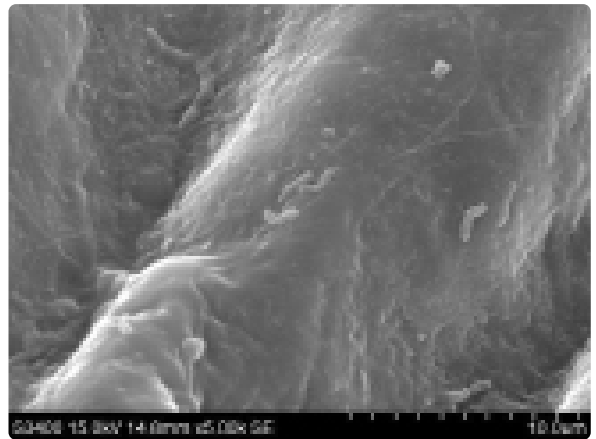
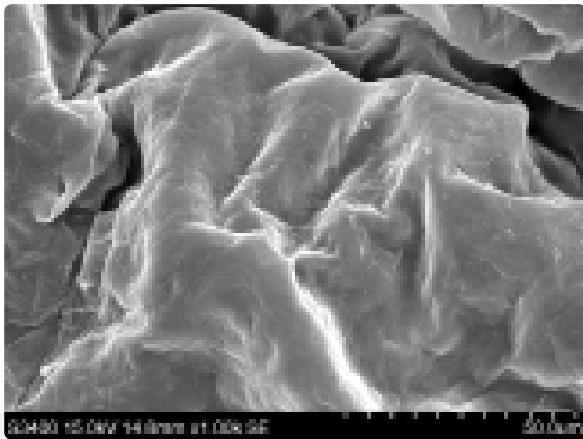


EXO FDS Azelaic Fusion, lowered significantly the amount of *Cutibacterium acnes* on ex vivo human skin explants compared to the untreated group after just 24 hours of application.

[DOWNLOAD EFFICACY STUDY](#)

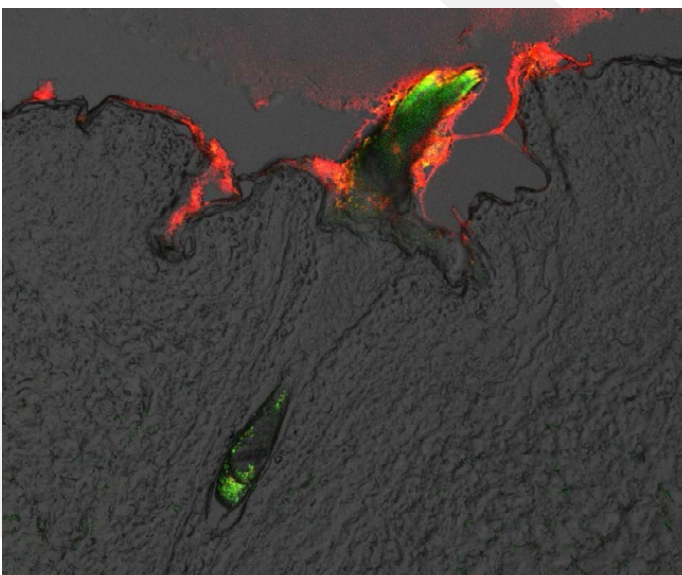


Microscopic aspect of *C. acnes* cells adhered onto ex vivo human skin explants (infection control group). Magnified views (x1.00K) (left image) and (x5.00K) obtained with SEM.



Microscopic aspect of ex vivo human skin explants treated with Product 1 for 24 hours after *C. acnes* infection. Magnified views (x1.00K) (left image) and (x5.00K) obtained with SEM.

## Targeted delivery



Specific release of the active ingredient  
into the follicle



DOWNLOAD  
DELIVERY STUDY



## Notes for formulators: how to use

- Shake before using.
- If the product is stored under 12°C, 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



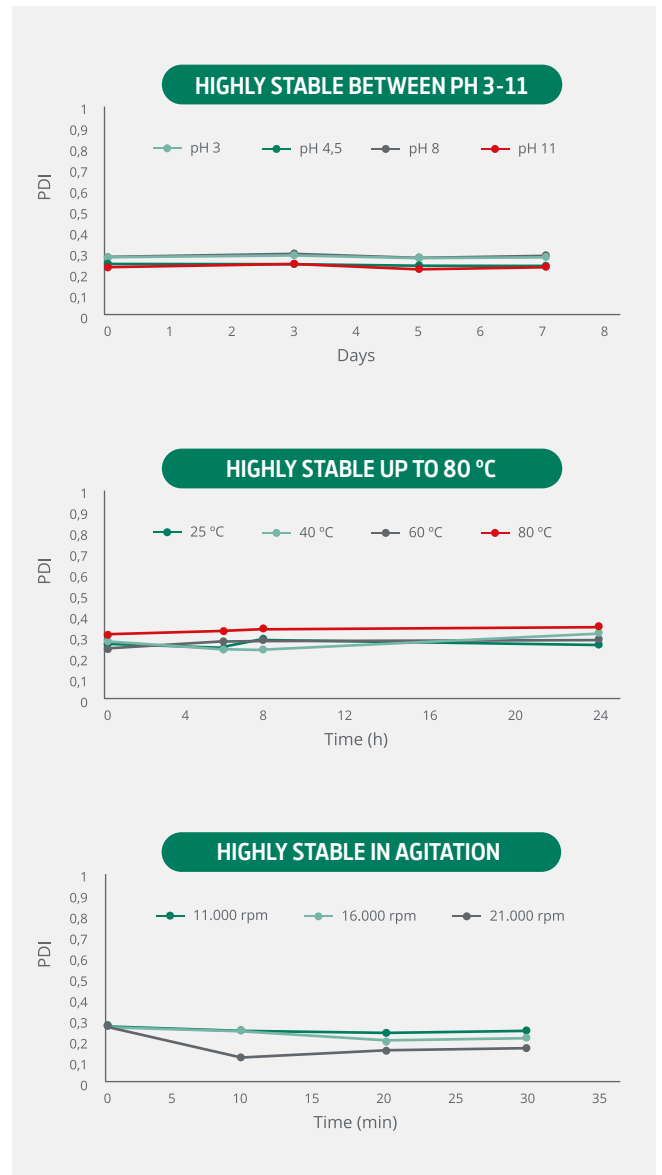
### Liposomes can be added without any problem to any cosmetic mixture

- 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

## OUR DELIVERY SYSTEMS AVAILABLE



### DEEP DELIVERY SYSTEM

The active ingredients encapsulated in the “Deep Delivery” systems are delivered specifically to the deepest layers of the epidermis in order to have the most precise and intense effect on the structures and cells located therein: melanocytes, Langerhans cells, keratinocytes, basal cells, Merkel cells...



### 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.



### 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**



INdermal - Nanovex Biotechnologies  
Parque Tecnológico de Asturias. CEEI.  
33428 Llanera, Asturias. SPAIN  
Tel.: +34 985 98 06 05

