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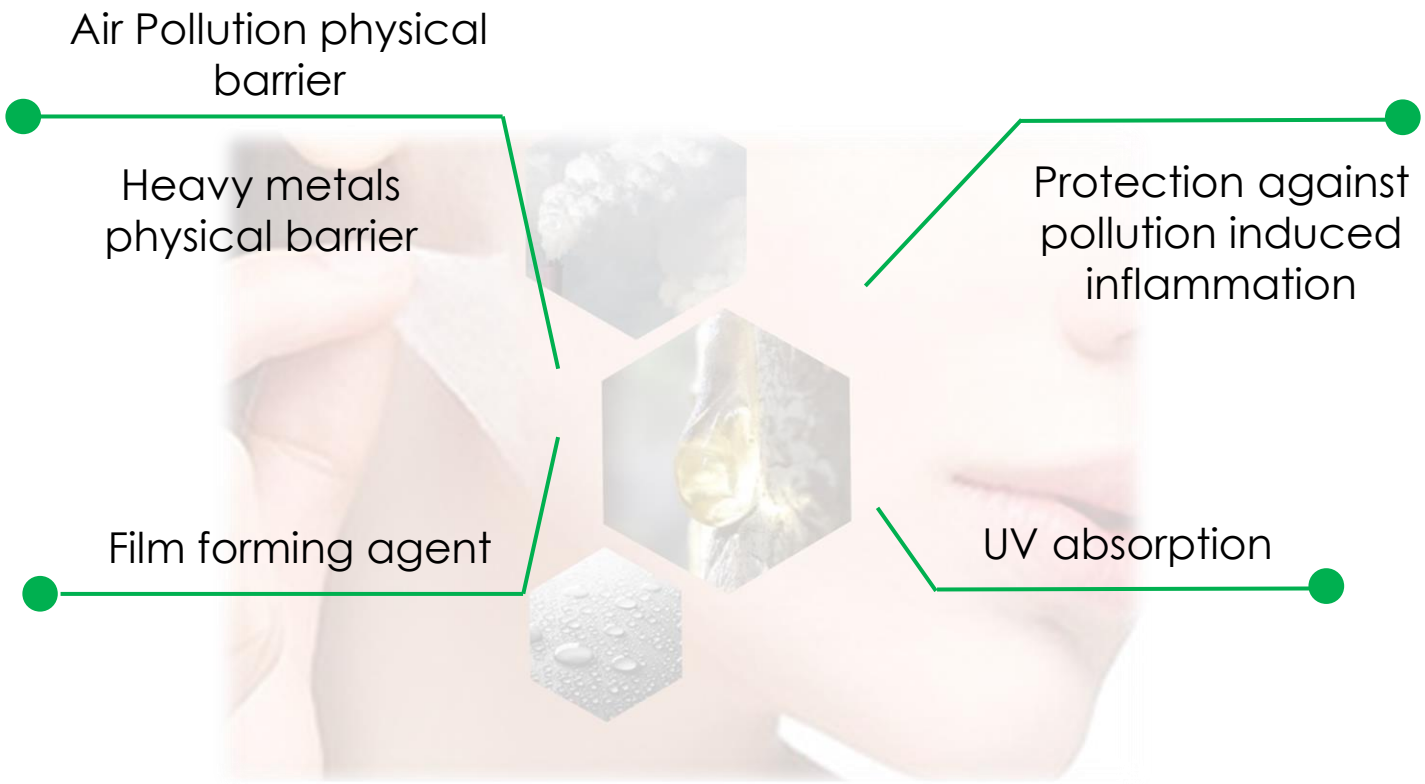
Natural Active Design

Ephyshield

The antipollution invisible protection

EphySHIELD, skin benefits



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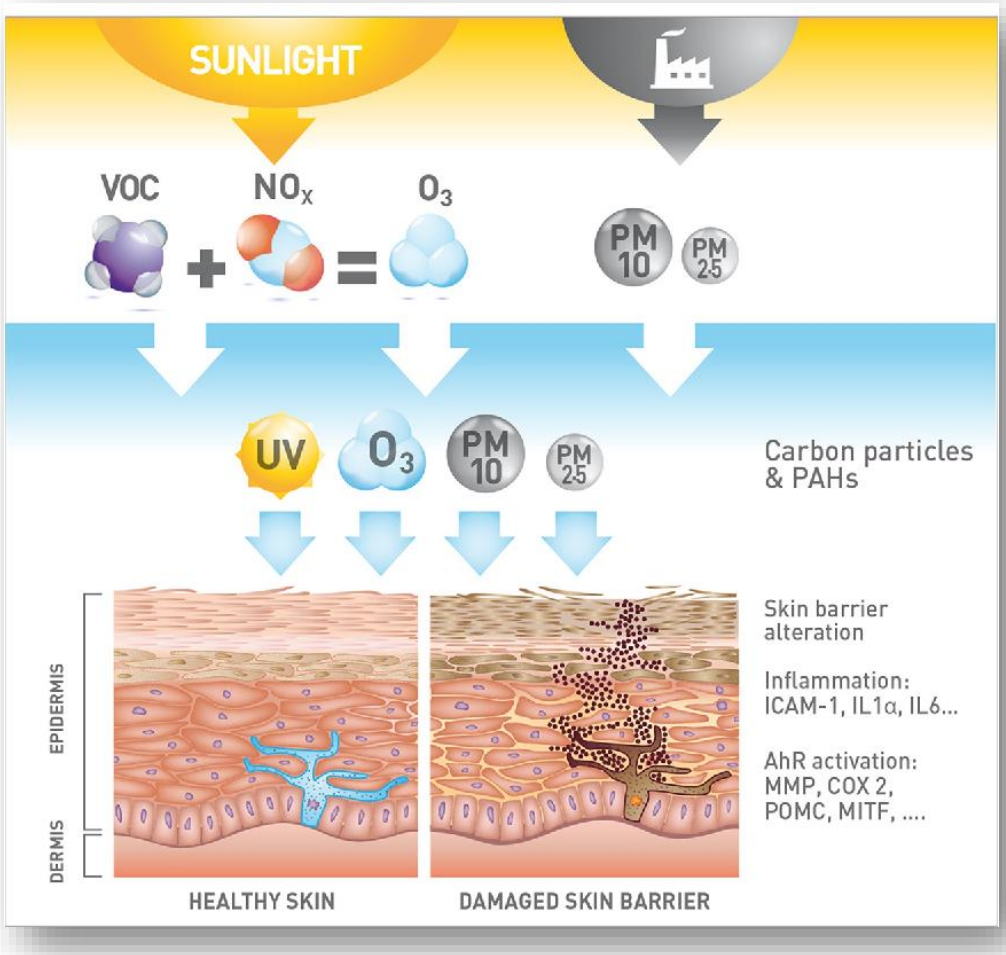
Air pollution and oxidative stress

A World Health Organization (WHO) report from 2016 states that over 3 million people die annually from air pollution, which places air pollution as the world's largest environmental health risk factor.

The increase in air pollution over the years has major effects on the human skin. Various air pollutants such as ultraviolet radiation (UV), polycyclic aromatic hydrocarbons (PAH), volatile organic compounds, oxides, particulate matter, heavy metals affect the skin and its integrity as a barrier.

It is has been widely recognized that air pollutants damage the skin by inducing oxidative stress [1,2].



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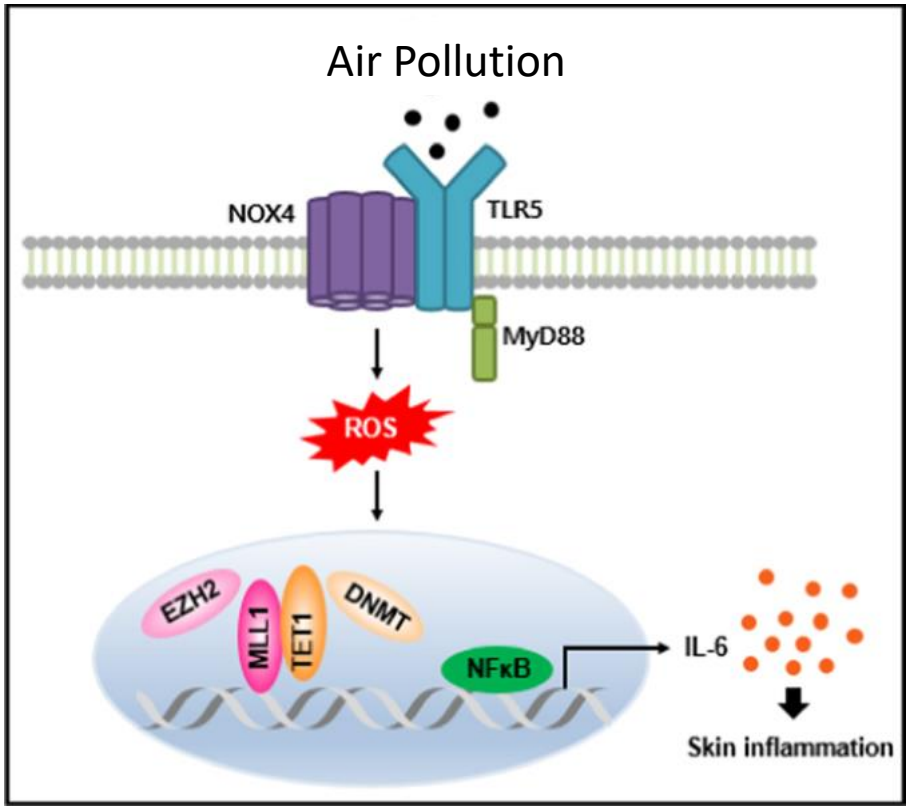
Air pollution and oxidative stress

A total of 1977 genes were found to be differentially expressed following particulate matter (PM) exposure. Park and all. have observed a significantly increased expression of pro-inflammatory genes interleukin (IL)-1β, IL-6, IL-8 and IL-33 in dermal fibroblasts exposed to PM10. Protein expression of IL-6 and IL-8 also significantly increased[3].



Interleukin 6 (IL-6) is one of the most reliable biomarkers, and it correlates well with severity of SIRS (systemic inflammatory response syndrome) and other inflammatory processes. IL-6 is a cytokine that mediates a wide range of inflammatory and immune responses.

Its expression is elevated in inflammatory or immunodeficient diseases [4-7].

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A physical barrier against Heavy Metals

MATERIAL AND METHOD :

The aim of this study was to evaluate the barrier property of EphySHIELD against heavy metals.

Test have been performed using Franz diffusion cells. Human **dermatomed skin** was pre-treated with EphySHIELD or physiological serum (control).

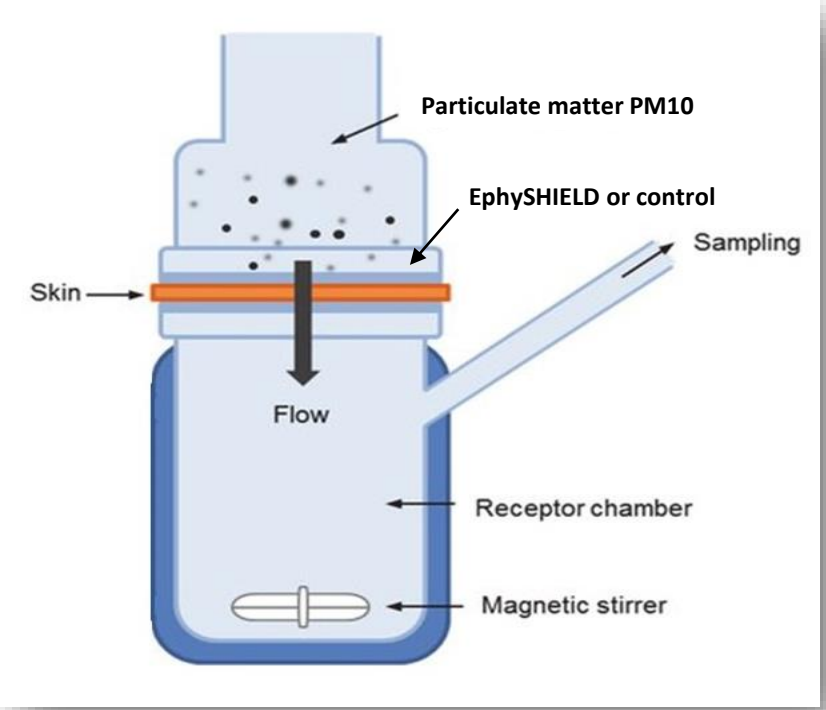
After 20 minutes/film formation/evaporation, **a PM10 suspension (S1)** was applied (20 mg/mL) on the skin and let in contact for 6 hours at 32°C +/-1°C.

At the end of the contact period, **fluid of the receptor chamber was recovered and kept for analysis (S2)**

Dermatomed skin were dissected and treated using ultrasounds for 5 minutes. Supernatant was recovered and analyzed **(S3).**

Evaluation of heavy metal levels was performed using ICP-MS technic

EphySHIELD at 2,5% has the ability to avoid direct skin contact with fine particules



Sample	Nickel (ppm)	Chromium (ppm)	Lead (ppm)
S1	7,2	18	1,9
S2	<LoQ	<LoQ	<LoQ
S3	<LoQ	<LoQ	<LoQ

	Nickel (ppm)	Chromium (ppm)	Lead (ppm)
LoQ	0,04	0,05	0,1

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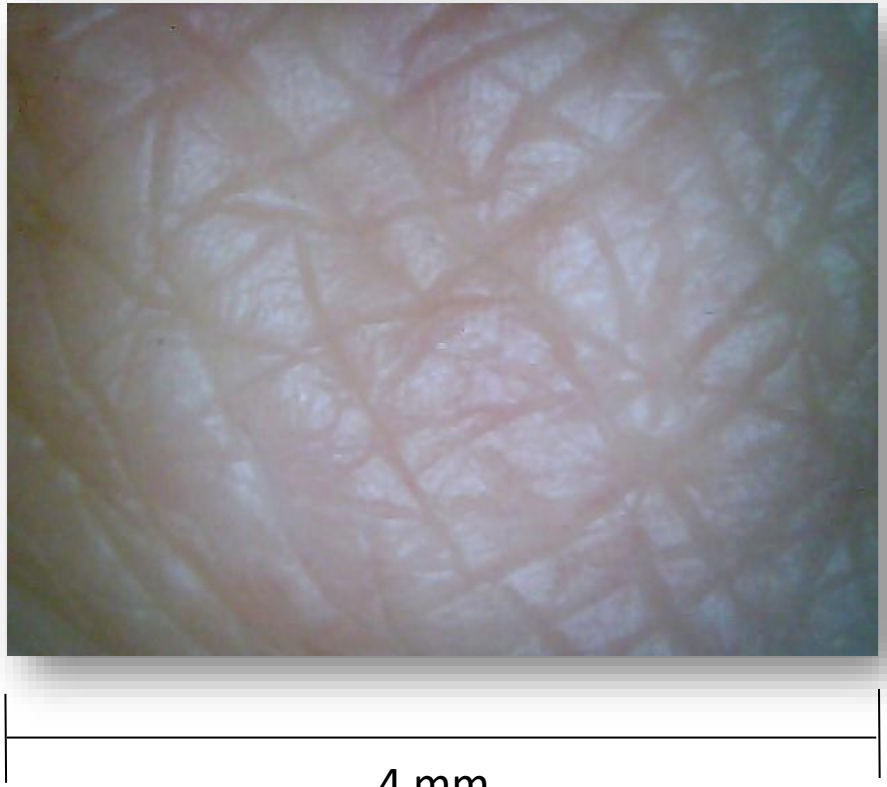
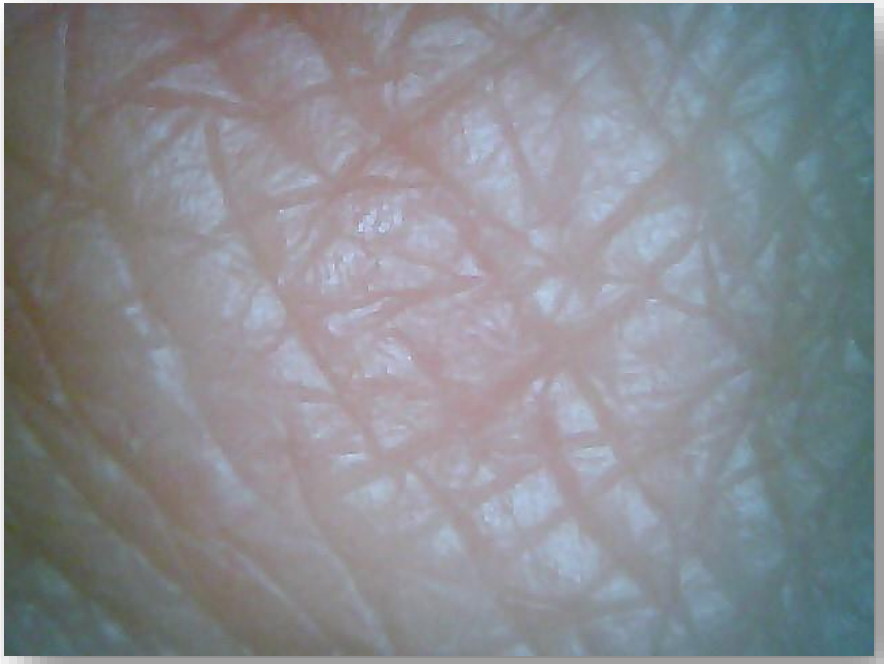
Untreated skin





MATERIAL AND METHOD In vivo test using an optical microscope equipped with 10x lens magnification

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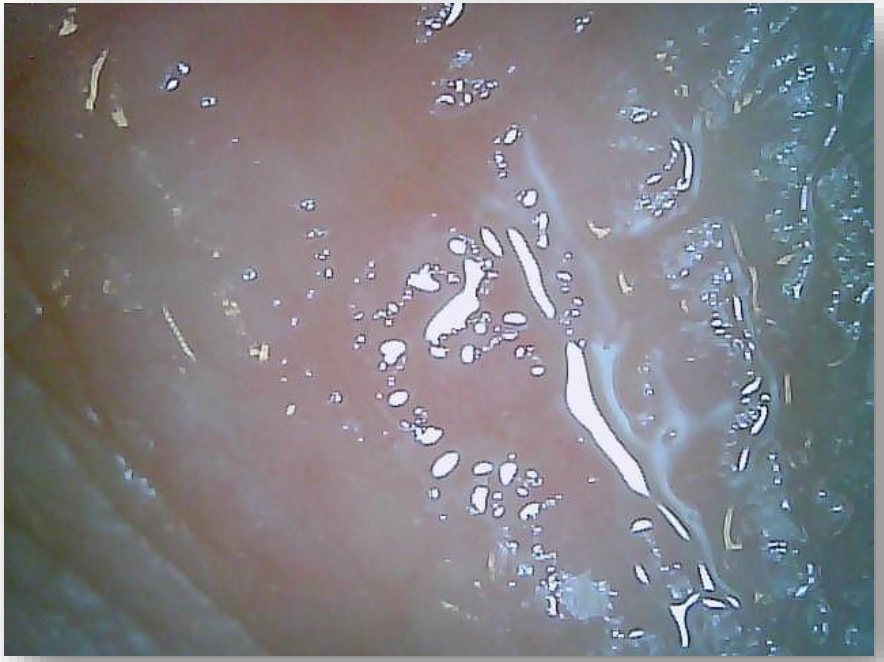
The invisible protection, the physical barrier

Skin 10s after product application

EphySHIELD at 2,5% in the Ephyster ECR



Ephyster ECR 100%

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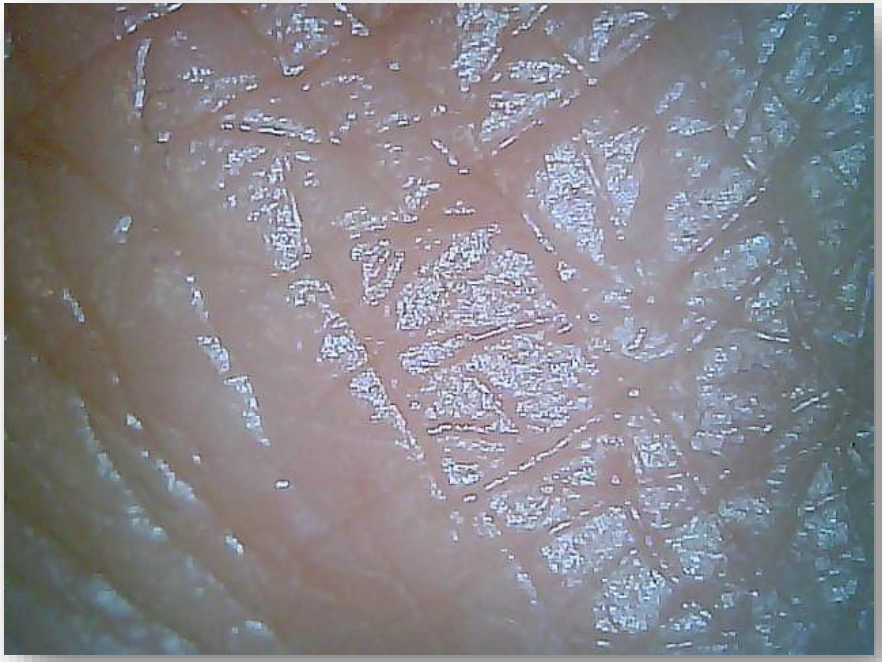
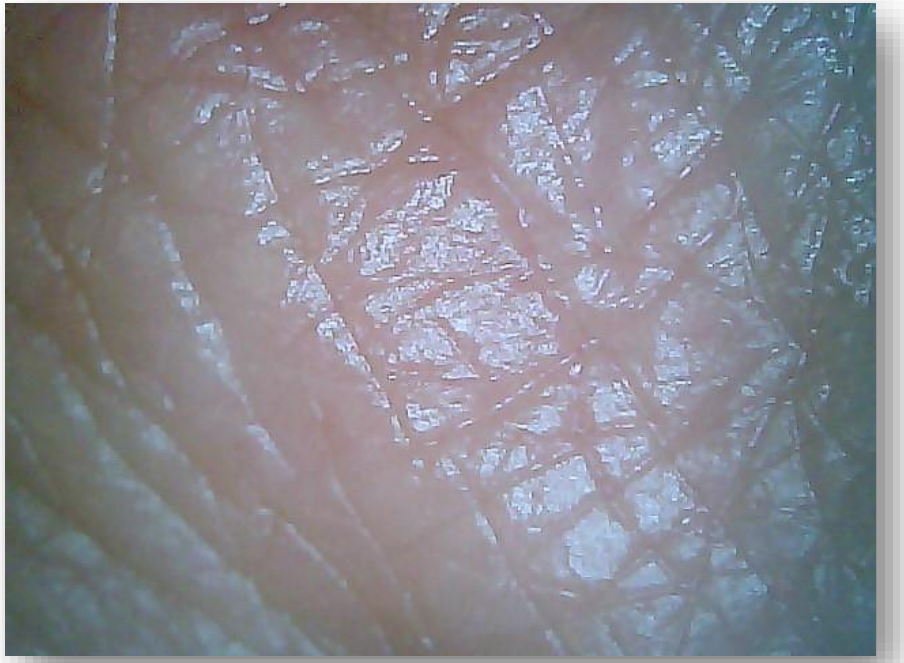
Skin after product drying



EphySHIELD at 2,5% in the Ephyster ECR



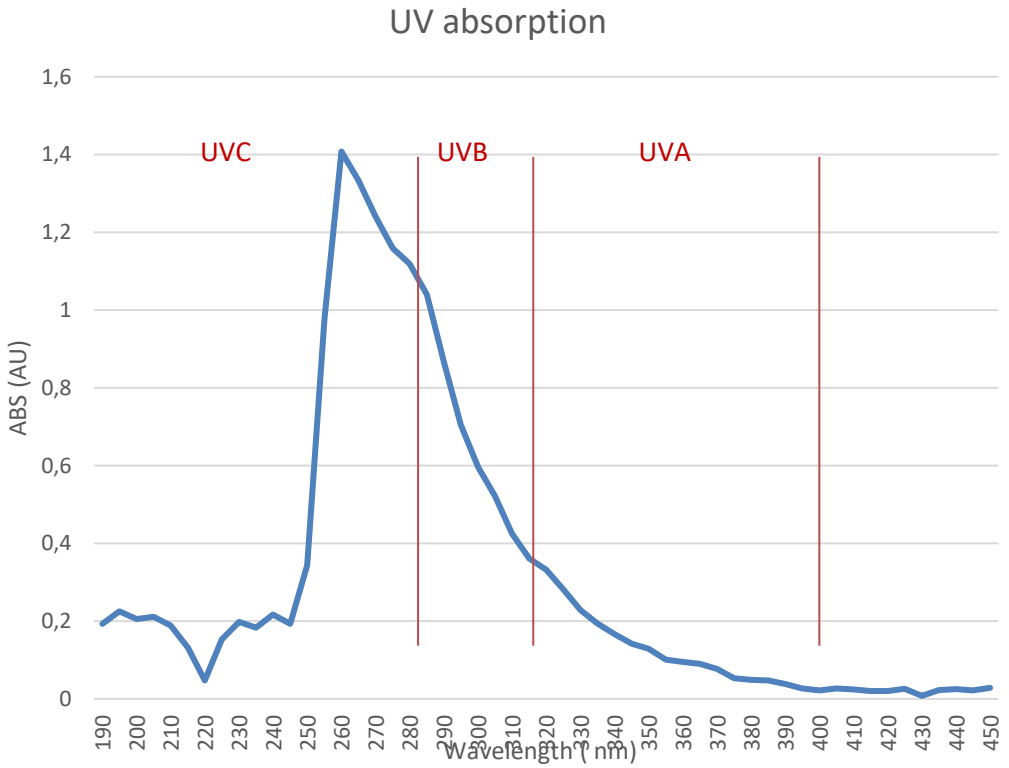
Ephyster ECR 100%

UV absorption properties

Sunlight that passes through the atmosphere and reaches the earth's surface mainly comprises visible light and some ultraviolet (UV) and infrared rays

Damage is inevitable if UV rays are too intense or the defenses in the skin are not sufficient, leading to negative consequences, such as oxidative damage and disease. Therefore, enhancing the external defenses against UV rays, rather than relying only on the skin's own defense capabilities, is essential to prevent UV-associated damage.

Defense strategies to protect the skin against the harmful effects of UV rays have been widely studied[8].



EphySHIELD can be considered as a UV absorber since it shown significant absorption in whole ultraviolet range i.e.; UVA, UVB and UVC

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Elemi Resin, botanical origin

The term "elemi" has been applied in the past to a large number of oleoresins from a variety of geographic and botanical sources. Nowadays, however, the term is almost always used to describe the product from the Philippines

Elemi is the soft, fragrant oleoresin obtained from the trunk of Canarium species, the most important of which is *C. luzonicum*.

Canarium is a genus of big shade trees in the Old World tropics, chiefly Malaysia to the Philippines, but extending to Papua New Guinea and other Pacific islands, which are often highly prized for their edible fruits and nuts. *C. luzonicum* is a large tree up to 35 m tall and 1 m in diameter.

To collect the oleoresin, tappers used a sharp "bolo" and a wooden mallet to make a series of cuts up the trunk of the tree, each cut resulting in removal of bark and exudation of the oleoresin. The diameter of the trees tapped was in the range 20-60 cm.
The exuded, sticky mass is collected at two-week intervals.

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Protective activity

MATERIAL AND METHOD :

The aim of this study was to evaluate the protective property of EphySHIELD against pollution-induced inflammation.

Test have been performed using Franz diffusion cells.

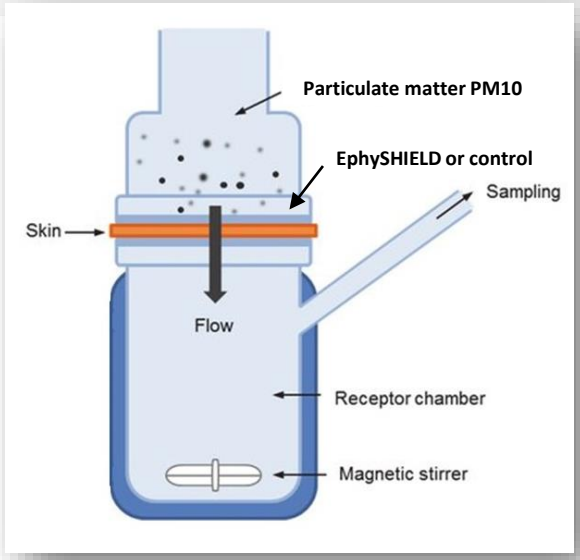
Human dermatomed skin was pre-treated with EphySHIELD or physiological serum (control). After 20 minutes/film formation/evaporation, a PM10 suspension was applied on the skin and let in contact for 6 hours at 32°C +/-1°C.

At the end of the contact period, dermatomed skin were dissected and treated using ultrasounds for 30 minutes. Supernatants were keept and analyzed.

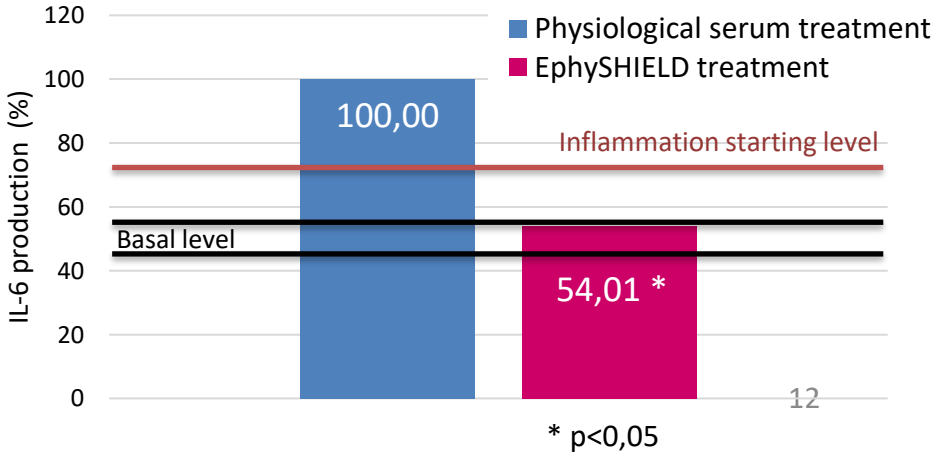
Evaluation of inflammation level was performed using a IL-6 ELISA Kit.

Basal inflammations, induced by the method and EphySHIELD pre-treatment were assayed and used as controls.

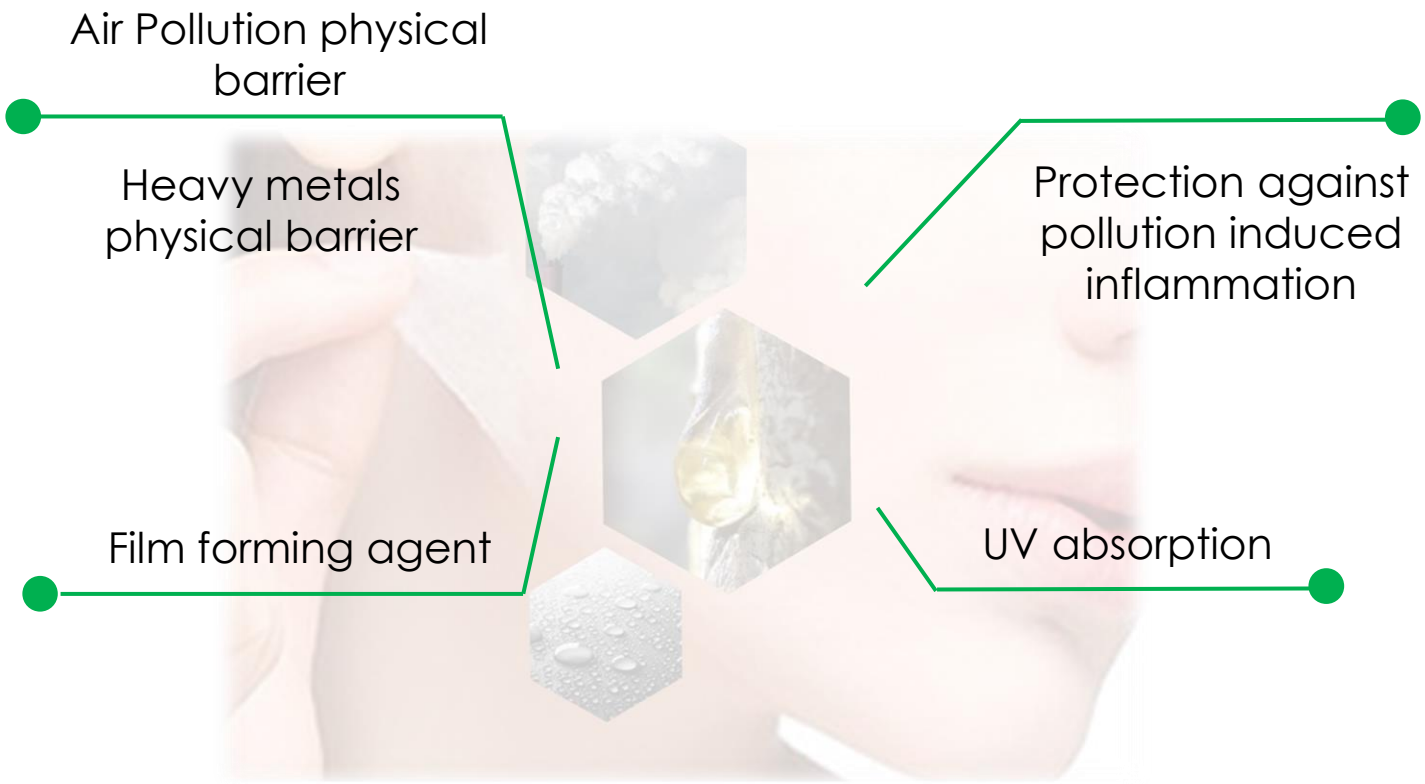
EphySHIELD at 2,5% has the ability to protect skin from pollution-induced inflammation



Pollution-induced inflammation



EphySHIELD, skin benefits



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Ephyshield, technical data sheet

- INCI: Ethyl linoleate & Helianthus annuus seed oil Canarium luzonicum gum nonvolatiles
- CAS: 544-35-4 & 84776-03-4 & 8023-89-0
- APPEARANCE: yellow to brown
- FORMULATION: oil-soluble
- STORE CONDITIONS: 24 months in a ventilated area
- DOSAGE: 2,5-5 %
- TOLERANCE:
  - Cutaneous/ Patch test: not-irritating
  - Ocular/ Cytotoxicity on SIRC Cells: Insignificant cytotox
  - Skin acceptability/ Clinical usage test: Well tolerated by the skin

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