



PRESS RELEASE
MITOKINYL®





The interactive solution to harmful urban pollution

Identity ————— **Protector** —

MITOKINYL®

Raw material: Yeast
Latin name: *Pichia heedii*
INCI name: Yeast Extract

To combat pollution, a true enemy of the skin, SILAB is offering **MITOKINYL®**, an anti-pollution natural active ingredient rich in glucomannans and able to combat harmful environmental stress via a unique regulation pathway.

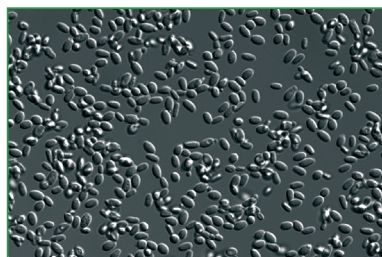
SILAB Research is the first laboratory to identify the central role of mitokines in an optimum anti-pollution strategy. Thanks to a sophisticated intracellular communication mechanism, these mediators, released by mitochondria under the effects of pollution, connect the skin to its environment and initiate an appropriate anti-stress response.

During a pollution attack, **MITOKINYL®** :

- regulates the two major biological pathways of pollutant stress response: the synthesis of mitokines (prohibitins) is normalized and the aryl-hydrocarbon receptor is deactivated;
- forms an effective, stratified, functional barrier;
- optimizes complexion tone and radiance in Caucasian and Asian volunteers.

MITOKINYL® protects fragile skin against urban stresses and is recommended in all anti-pollution facial and body skincare products.

- Patented active ingredient
- Natural origin
- Preservative free
- «Made in France»
- Compliant with Europe, USA, Japan and China cosmetic regulations
- Recommended amount: 1 to 3%



Pichia heedii

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MITOKINYL®

Rich in glucomannans obtained from *Pichia heedii*,
a yeast isolated from the Saguaro cactus

Regulates anti-pollution biological pathways

- restores normal synthesis of a «mitokine»: prohibitin
- deactivates the aryl-hydrocarbon receptor



Combats the harmful effects of pollution



Re-establishes an
effective barrier function

- restores epidermal differentiation
- reduces transepidermal water loss



Improves
skin complexion

- reduces synthesis of melanin
- optimizes radiance and chromaticity



ANTI-POLLUTION EFFECT



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Cosmetic efficacy ————— **Anti-pollution** —

► **MITOKINYL® restores the mitokines pathway**

Study *in vitro* on SILABSKIN® RE reconstructed epidermis.

Modeling *in vitro* has shown that stresses resulting from pollution cause a significant reduction in the synthesis of mitokines (prohibitins) by human keratinocytes. This reduction is due to the direct effect of pollutants (benzo[a]pyrene: -12%; particulate matter PM: -15%) but is also due to a consequence of pollution (reduction in the oxygen content of air: -37%).

When subjected to an environment mimicking the consequences of pollution, the synthesis of prohibitin by SILABSKIN® RE is significantly reduced by 28%. Tested at 0.25% in this model, **MITOKINYL®** significantly restores the synthesis of prohibitin by 58%, thereby ensuring the maintenance of intracellular communication among partner organelles and the triggering of a suitable anti-stress response.

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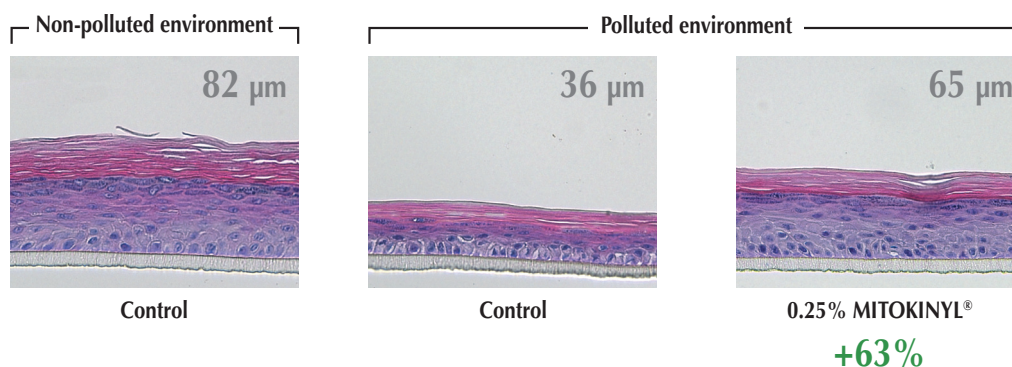
Cosmetic efficacy ————— **Barrier function** —

► MITOKINYL® favors the construction of a stratified and functional epidermis

Study *in vitro* on SILABSKIN® RE reconstructed epidermis.

When faced with a pollution incident, the epidermal construction and the synthesis of epidermal differentiation markers, cytokeratin 10, filaggrin and loricrin, are significantly reduced.

Tested at 0.25% in this model, **MITOKINYL®** significantly restores the epidermal construction by 63% (see figure) and the synthesis of cytokeratin 10, filaggrin and loricrin by 45%, 52% and 69%, respectively.



► MITOKINYL® revitalizes the recuperation capacity of the skin barrier

Tewameter study *in vivo*.

MITOKINYL® improves the recuperation capacity of the barrier function of the skin. In only 4 days, **MITOKINYL®** restores the barrier effect to more than 90%, in contrast to the placebo zone that requires 7 days before observing total recuperation. The difference is significant after only 1 day.

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Cosmetic efficacy — Overall appearance of the skin —

► MITOKINYL® inhibits melanogenesis

Study *in vitro* on cultures of melanocytes.

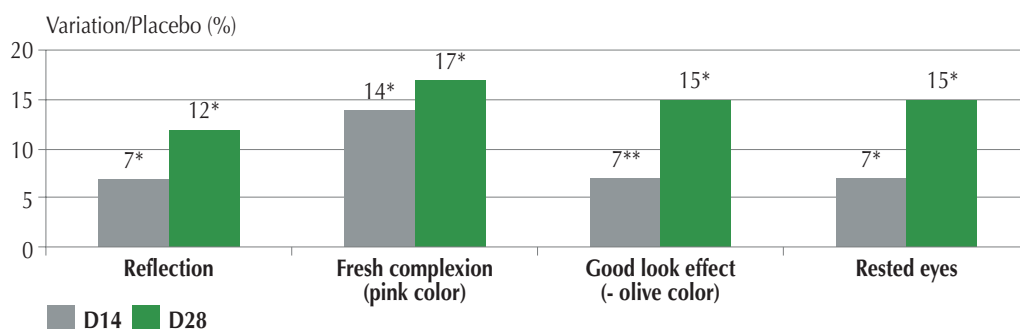
Tested at 1%, **MITOKINYL®** significantly reduces the quantity of melanin synthesized by B16F1 melanocytes by 38%, and that synthesized by human melanocytes by 43%.

► MITOKINYL® improves skin complexion

◆ Complexion radiance and the Caucasian panel

Study *in vivo* on Caucasian volunteers.

After 14 days of twice daily applications, **MITOKINYL®**, formulated at 3% and in comparison to the placebo, improves parameters of complexion radiance. This effect continues after 28 days of applications.



*: significant differences according to Student's t test / placebo ($P < 0.05$)
 **: significant difference according to Wilcoxon's signed rank test / placebo ($P < 0.05$)

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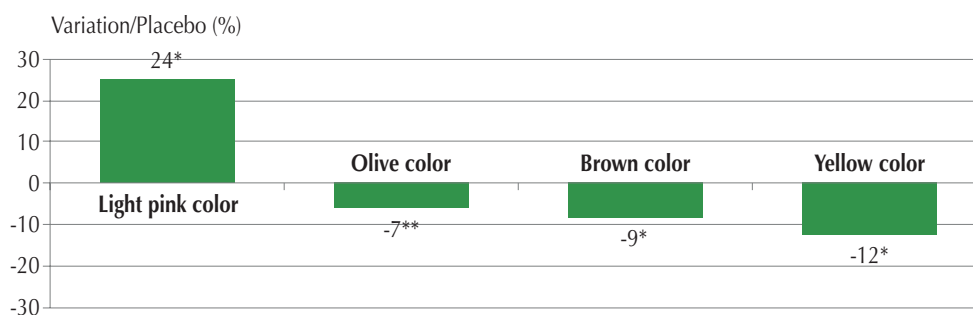
Cosmetic efficacy — Overall appearance of the skin —

► MITOKINYL® improves skin complexion

◆ Chromaticity and the Asian panel

Study *in vivo*⁽¹⁾ on Asian volunteers.

After 28 days of twice daily applications, **MITOKINYL®**, formulated at 3% and in comparison to the placebo, significantly optimizes parameters of skin color of Asian subjects.



*: significant differences according to the Mann-Whitney test / placebo ($P < 0.05$)

**: significant difference according to the Mann-Whitney test / placebo ($P < 0.10$)

(1) conducted by the Laboratory of Skin Engineering and Biology of the West China Hospital located in the city of Chengdu, Sichuan province, directed by Professor Li Li..

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