CORBIS®

WHITONYL®

AND THE COMPLEXION BECOMES PORCELAIN

Brown spots and senescence spots result directly from chronic exposure to sunlight. These pigment disorders, localized on the hands, face and arms, accentuate with age and are a considerable esthetic problem.

A clear, homogeneous and opaline complexion in spite of the harm from UV? This is what SILAB proposes with the launch of WHITONYL®, its new biological concept of skin depigmentation. Rich in xylose and galactose from *Palmaria palmata*, a red alga, WHITONYL®:

➢ limits melanogenesis by inhibiting the activity of tyrosinase and the quantity of melanin synthesized;

➢ reduces the synthesis of the protein anchoring complex (Rab27a and melanophilin), indispensable for the transport of melanosomes to keratinocytes;

➢ inhibits the synthesis of Stem Cell Factor (SCF) thereby controlling photoinduced pigmentation.

Since WHITONYL® has an innovating and complete anti-pigmenting activity, it gives the skin a luminous and ultra-refined complexion. It is recommended for all lightening and depigmenting face and body care products.

Silab

GENERAL PRINCIPLES

Obtained from *Palmaria palmata*, a red alga, WHITONYL® is an oligosaccharide fraction rich in xylose and galactose. WHITONYL® acts on the different steps involved in the skin pigmentation process: melanogenesis – transport of melanosomes and UV-induced pigmentation, thus proposing a complete and innovative depigmenting biological concept.

WHITONYL® controls the principal steps of skin pigmentation

➤ WHITONYL® limit melanogenesis

- WHITONYL® inhibits the activity of tyrosinase, the convergence point of signaling pathways;
- WHITONYL® reduces the quantity of melanin synthesized, responsible for skin pigmentation.

➤ WHITONYL® limits the transport of melanosomes

- WHITONYL® acts on the protein anchoring complex Rab27a-melanophilin, preventing the transport and accumulation of melanosomes at the dendritic extremities of melanocytes.

➤ WHITONYL® controls photoinduced pigmentation

- WHITONYL® reduces the synthesis of Stem Cell Factor, a mediator of signaling pathways of photoinduced pigmentation.

In vivo studies have demonstrated the depigmenting activity of WHITONYL® in both Caucasian and Asian skin. Formulated at 4% and tested vs. placebo, WHITONYL® leads to a significant lightening of senescence spots and a significant decrease of their mean surface. Since it effectively attenuates brown spots due to age and sunlight and unifies the complexion, WHITONYL® is recommended for all face and body care intended to lighten the skin.

TECHNICAL SHEET

- **Latin name :** *Palmaria palmata*
- **I.N.C.I. name :** Water & Palmaria palmata extract
- **Cas N° :** 7732-18-5 / 223751-74-4

Form
- Aqueous solution
- Aspect : limpid liquid
- Odor : characteristic
- Color : yellow

Analytical features
- Dry matter : 60 - 90 g/l
- Total sugars (Dubois method) : 45 - 65 g/l
- pH : 3.5 - 4.5
- Preservative : Phenoxyethanol 1.50 %

Bacteriology
- Sterile product
- No yeast and mould present
- No pathogenic germs present

Packaging
Sterile 1L and/or 5L plastic container

Storage
Store preferably at +20°C

Use
- Fully soluble in aqueous medium
- Solubility in ethanol: soluble up to 20/80 ethanol/water (v/v)
- Can withstand temperatures up to 80°C for at least two hours
- Stable at pH between 2 and 10
- Recommended amount: 1 to 4%

Innocuousness

✓ Determination of irritant potential on caucasian skin: Non irritant
✓ No mutagenecity according to Ames' test
✓ Non phototoxic
✓ Non cytotoxic
✓ Evaluation of sensitizing capacity on human volunteers with normal skin: Non sensitizing
(Marzulli-Maibach method)

IN VITRO STUDIES

Effect on melanogenesis (Anti-tyrosinase activity and melanin synthesis)

- Study conducted on B16F1 melanocytes and human melanocytes

The aim of these studies was to quantify and visualize the effect of WHITONYL® on tyrosinase, a key enzyme of melanogenesis. Tested at 2% on cultures of B16F1 melanocytes, WHITONYL® reduces the activity of tyrosinase by 27%. This effect was confirmed and visualized by L-DOPA staining of normal human melanocytes.

Visualization of the effect of WHITONYL® on tyrosinase activity

- Study carried out by measuring the quantity of melanin synthesized in cultures of B16F1 melanocytes.

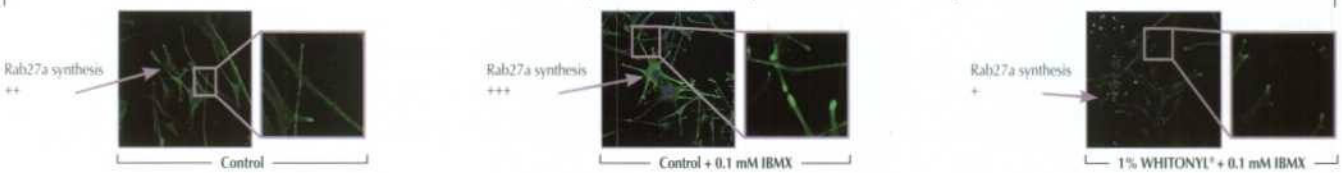
This study was conducted to evaluate the capacity of WHITONYL® to inhibit the synthesis of melanins, pigments responsible for skin color and whose mechanism dysfunctions in case of excessive exposure to the sun. Tested at 2%, WHITONYL® reduces the quantity of melanin synthesized by 52%.

Effect on the transport of melanosomes (Syntheses of Rab27a and melanophilin)

Studies conducted by Western blot and immunocytology on cultures of normal human melanocytes

The aim of these studies was to evaluate the action of WHITONYL® on the protein anchoring complex involved in the transport of melanosomes. Tested at 2%, WHITONYL® significantly reduces the synthesis of Rab27a and melanophilin by 31% and 35%, respectively. The inhibition of synthesis of Rab27a was visualized by immunocytology.

Effect of WHITONYL® on the synthesis of Rab27a by normal human melanocytes



Effect on photoinduced pigmentation (Activity of Stem Cell Factor)

Study carried out by ELISA assay in normal human keratinocytes

The aim of this study was to evaluate the capacity of WHITONYL® to reduce the activity of SCF that increases considerably after UVB irradiation. Tested at 1%, WHITONYL® significantly reduces its synthesis by 81%, thereby limiting photoinduced pigmentation.

IN VIVO STUDIES

STUDIES ON CAUCASIAN SKIN

Instrumental evaluation of the depigmenting action of WHITONYL®

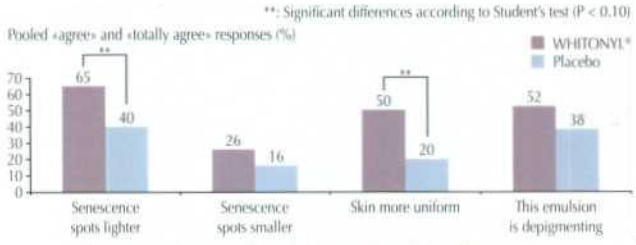
Study carried out by chromametry on the senescence spots of 25 healthy female volunteers, mean age 60 ± 6 years

After 28 and 56 days of treatment, WHITONYL®: significantly increases parameter L* (clarity of the skin), significantly reduces parameter b* (yellow melanin pigmentation) and significantly increases parameter ITA° (the higher ITA°, the lighter the skin). Senescence spots are less pigmented and lighter. This effect was observed in 76% of the volunteers. In addition, a significant decrease of the mean surface of spots was observed in 58% of the volunteers.

Subjective evaluation of the depigmenting action of WHITONYL®

Study conducted on 25 healthy female volunteers, mean age 60 ± 6 years. In this test, the sensations felt were determined with self evaluation questionnaires.

In the conditions of the study and after 8 weeks of twice daily treatment, the volunteers stated that WHITONYL® was more effective than the placebo. They noted a significant lightening of senescence spots and a more uniform skin after treatment.



Subjective evaluation of the depigmenting effect of WHITONYL® formulated at 4% in an emulsion and compared to the placebo.

STUDY ON ASIAN SKIN

Instrumental evaluation of the depigmenting action of WHITONYL®

Study carried out in Thailand by the company Spincontrol Asia on 27 healthy female Asian subjects, mean age 33 ± 8 years. The analysis involved measuring skin color on photographs of the face taken before and after treatment.

The parameters used for this test were L* and ITA°. After 56 days of twice daily applications, WHITONYL® significantly increased parameters L* and ITA° by 0.6% and 2.9% respectively. Formulated in an emulsion, WHITONYL® led to a significant lightening of the skin of the entire face. This effect was observed in 68% of the volunteers.

Treatment with WHITONYL® formulated at 4% in an emulsion and tested vs. placebo

WHITONYL®

Xylose and galactose-rich oligosaccharide fraction of *Palmaria palmata*

Inhibits melanogenesis	Limits melanosome transport	Limits photoinduced pigmentation
Inhibits the activity of tyrosinase and the amount of melanin synthesized	Reduces synthesis of the anchoring complex essential to melanosomes transport (Rab27a and melanophilin)	Reduces photoinduced synthesis of SCF

DEPIGMENTING EFFECT
on Caucasian and Asian skins

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