CODIF

Recherche & Nature

BSB Innovation Prize 2010

PHORMISKIN BIOPROTECH G

youth brightness

BE INSPIRED

OBSERVE

REVEAL

PHORMISKIN BIOPROTECH G:
youth brightness

This active biotechnological agent goes back to the origins of life to delay skin senescence and restore skin with its original freshness and radiance.

Whereas the number 1 enemy of young skin remains exposure to sunlight, senescent and aging skin is characterized by the loss of its regeneration and defence capacities. Visually, the skin loses its freshness, radiance and homogeneity and wrinkles develop.
To combat skin aging, CODIF R&N teams have developed cutting-edge biotechnological tools to cultivate a Cyanobacteria that first appeared on Earth several billion years ago and which owes its survival and longevity to the best preserved and most elaborate photo-protection mechanism ever invented: **thioredoxin**.

Phormiskin Biopotech G is a biotechnological extract. This true concentrate of original life stimulates the synthesis of thioredoxin in the dermal and epidermal cells, and delays skin senescence to give visibly younger skin.

BE INSPIRED

Phormidium persicinum is an intermediate microorganism between bacteria and algae, related to the Cyanophyceae family, still called the blue-green micro algae.

Cyanophyceae appeared approximately 3.8 billion years ago and belong to the species that contributed to the build up of molecular oxygen in the Earth's atmosphere allowing the development of life on Earth. *Phormidium persicinum* is organized in mucilage-producing colonies that have generated over many billions of years the geological formations called stromatoliths, (from the Greek stroma, carpet and lithos, stone): these are rock domes in the shape of “cushions” or “columns”, which have helped de-acidify the oceans.

The CODIF Recherche et Nature teams have used state-of-the-art biotechnological tools to extract *Phormidium persicinum* from its medium without harming its remarkable properties. The development of sophisticated culture methods means that it may now be cultivated under controlled conditions that are very close to those of its natural environment in order to extract the protective and beneficial substances that have ensure its longevity and continued existence for many billions of years.

OBSERVE

MEMO OF SKIN BIOLOGY

Thioredoxin: sophisticated, ancestral photoprotector

Thioredoxin is a protein that is widely distributed in animals, plants and bacteria with a highly conserved enzymatic active site.
There are 2 types of thioredoxin, both found in the skin: TX1 located in the cell cytoplasm and TX2 located in the mitochondrial membranes.

Role of thioredoxins in the skin:

STIMULANT EFFECT

- Cell renewal
- Cell differentiation
- Cell repair
- Ascorbic acid regeneration

+

PROTECTIVE EFFECT

- Oxidation of mitochondrial membranes
- Cytotoxicity of free radicals
- Cytotoxicity of inflammatory molecules
- Cell Apoptosis (cell suicide)

=

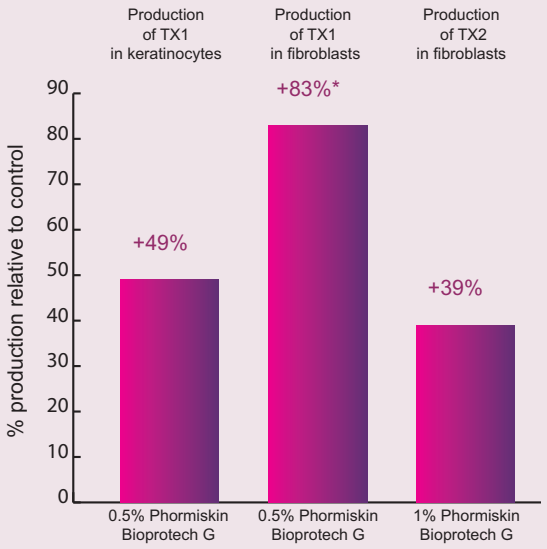
- Reduction in damage to cell DNA (inhibition of Pyrimidine dimer formation)
- Reduction in apoptosis (inhibition of caspase 3)
- Total protection against the sun burn cells

» OVERALL FIGHT AGAINST SKIN SENESCENCE

IN-VITRO TESTS

PHORMISKIN Bioprotech G stimulates the production of thioredoxins 1 and 2

From a concentration of 0.5%, Phormiskin Bioprotech G stimulates the synthesis of Thioredoxin 1 and 2 by keratinocytes and fibroblasts.
This action reinforces the skin's internal defences against the damage induced by daily exposure to UV light: Damage and breakdown of DNA, induction of cell death etc. The stimulation of thioredoxin synthesis also induces a reactivation of the repair and cell regeneration processes making it possible to delay cell death and skin senescence.

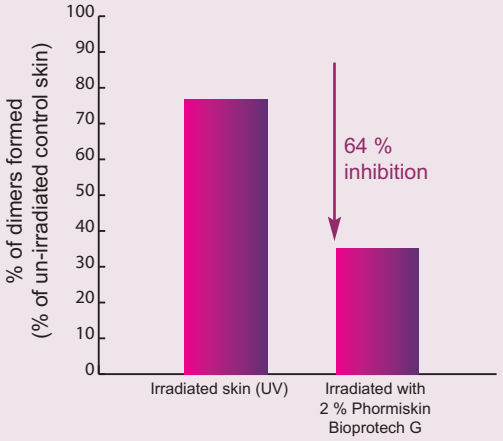


*p=0,07 Student t Test

PHORMISKIN Bioprotech G inhibits the formation of pyrimidin dimers

Pyrimidine dimers are characteristic structures found in DNA damaged by exposure to UV light. By stimulating skin Thioredoxin 1 and 2 synthesis, Phormiskin Bioprotech G reinforces the natural protection of the skin and inhibits DNA lesions that lead to skin ageing.

Phormiskin Bioprotech G protects cell DNA against the harmful effects of UV light.

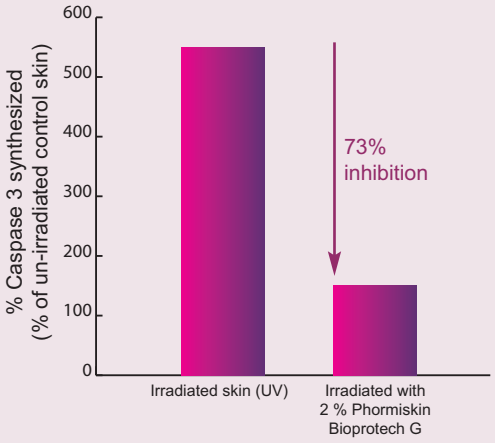


PHORMISKIN Bioprotech G inhibits the formation of Caspase 3

Caspase 3 is a characteristic enzyme of the cell death phenomenon called apoptosis, which occurs when cell damage has become too extensive for repair. The apoptosis phenomenon is frequently initiated by repeated exposure to UV light.

By stimulating skin thioredoxin 1 and 2 synthesis, Phormiskin Bioprotech G reinforces its protection systems and cell repair and inhibits cell death phenomena.

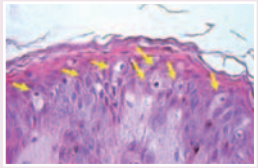
Phormiskin Bioprotech G inhibits cell death phenomena after exposure to UV light.

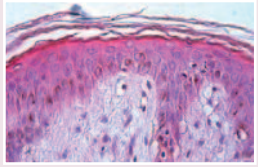


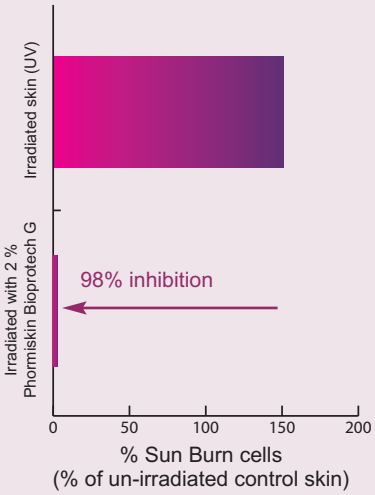
PHORMISKIN Bioprotech G inhibits the formation of "Sun Burn Cells"

Sun Burn Cells (shown by the yellow arrows) are keratinocytes in cell death and have a specific morphological structure, resulting in important skin damage.

Phormiskin Bioprotech G provides the skin with total protection against the formation of Sun Burn Cells, the final signs of severe skin damage leading to a premature senescence of cells and skin.







REVEAL

As the skin ages the complexion loses its radiance and homogeneity, the skin withers and fades and cutaneous imperfections are accentuated.

CLINICAL TESTS

Evaluation of the rejuvenating effect of PHORMISKIN Bioprotech G.

Methodology:

15 volunteers aged between 45 and 65 years of age.
Phormiskin Bioprotech G 2%
2 applications per day for 28 days over the entire face.

The rejuvenating effect of Phormiskin Bioprotech G was assessed on photographs taken in polarised light. Two methods of analysis were used (RGB and co-occurrence matrix) to assess the efficacy of the active ingredient on:

- the differences in colour between the different zones of the face: their reduction reflects an increase in the homogeneity of the complexion.
- the differences in intensity of colour between different zones of the face: their reduction reflects an increase in the luminosity of the complexion.
- the homogeneity of texture between different zones of the face.

Five different zones were compared: forehead, chin, cheeks, under the eyes, and the nose.

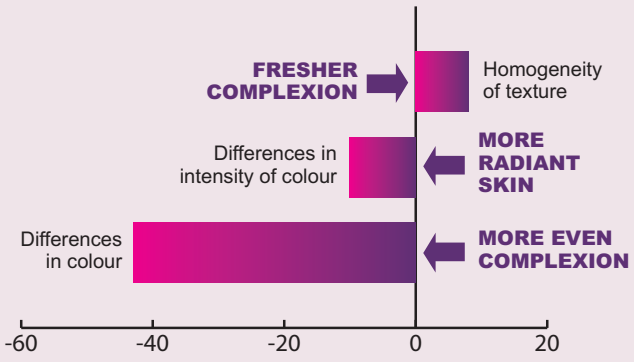
Results:

When used at 2%, Phormiskin Bioprotech G:

• **Reduces the differences in colour** between the different zones of the face from -1.1% on average and **up to -41.7%**.
The complexion is visibly more even.

• **Significantly reduces the differences in intensity of colour** between the different zones of the face from -2.7% on average and **up to -11.2%**.
The complexion is visibly more radiant.

• **Significantly increases the homogeneity of texture** by +2.1% on average and **up to +7.5%**.
The texture of the skin is visibly finer for a "fresh complexion" effect.



By combating the mechanisms of skin ageing, Phormiskin Bioprotech G improves the homogeneity and luminosity of the complexion, as well as the texture of the skin. This revitalizing concentrate combines reparative and protective actions.
It is the ideal solution for mature skins for a rejuvenating effect combined with slowing of cutaneous ageing.

Biotechnological process | Marine origin | Hydrosoluble active ingredient | *in-vitro* test | *in-vivo* test | ECOCERT validation | Controlled management program of natural resources

PHORMISKIN BIOPROTECH G: youth brightness

Cosmetic actions

- Slows the process of skin ageing: Protection of cellular DNA, inhibition of cell death processes, reduction in the number of sunburn cells.
- Increases the homogeneity and luminosity of the complexion.
- Refines the texture of the skin.

INCI

Phormiskin Bioprotech G: Glycerin (and) Seawater (and) Phormidium persicinum extract

Recommended concentration of use

Phormiskin Bioprotech G: 2%

ECOCERT APPROVED

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All our wastewater is processed and purified using filtrating gardens.
A succession of airtight horizontal and vertical filters is used to depollute wastewater by the roots of plant species chosen for their draining properties.

Iris, water mint, flowering rush, willows etc… now form part of the image of the brand which is recognized for its commitment to the preservation of natural resources

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