



HELIOCARE

Active Photoimmunoprotection

FERNBLOCK® TECHNOLOGY

FERNBLOCK® is a natural plant extract which helps protect skin from the harmful effects of UVA & UVB radiation. Its effectiveness has been clinically demonstrated in both topical and oral sun protection products.

It represents an important technological innovation, going beyond traditional protection focused on sunburn only to include ***four new levels of protection:***

	IMMUNOLOGICAL		CELLULAR DNA
	ANTI-OXIDANT		SKIN ARCHITECTURE

FERNBLOCK® is the main active ingredient in HELIOCARE products and covered by US Patent 56141679 as an anti-oxidant and photoprotector for oral and topical use.

ORIGIN & DEVELOPMENT

FERNBLOCK® is extracted from *Polypodium leucotomos*, a fern originating in Central America used for centuries as an anti-inflammatory agent in the treatment of dermatological conditions such as psoriasis and atopic dermatitis.



It is composed essentially of polyphenols, flavonoids and monosaccharides.

12 years of research and clinical investigation conducted in conjunction with the Harvard Medical School and leading experts in the field of photoprotection (Fitzpatrick, Pathak, González) lead to the development of the extract for both oral and topical photoimmunoprotection.

Over the past 10 years FERNBLOCK® has been the object of over 20 publications in leading scientific journals (*J Am. Acad. Derm.*; *J Derm. Science*; *Photoderm*, *Photoimmun & Photomed*).

It is the ***first and only technology to have demonstrated oral photoprotection effectiveness in humans after a single administration.*** Similar evidence does not exist for other elements with photoprotection claims (i.e. anti-oxidants: β -carotene, vitamin C & E, etc.).

FERNBLOCK® is currently commercialized in oral and topical photoimmunoprotection products in over 20 countries (USA, Spain, UK, Taiwan, Korea, New Zealand, Mexico, Brazil, ...)

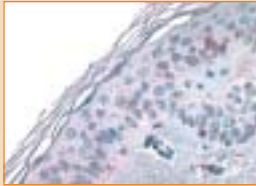
CLINICAL – HISTOLOGICAL EFFICACY

Extensive scientific and clinical data demonstrate Fernblock®'s efficacy:

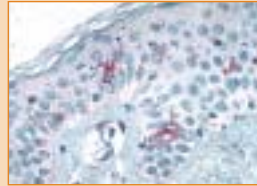


IMMUNOPROTECTION

Solar Simulator,
without Fernblock®



Solar Simulator,
with Fernblock®



Fernblock® protects Langerhans cells and preserves their functionality⁽¹⁾, activating the skin's defences before, during and after sun exposure.



ANTI-OXIDANT ACTIVITY⁽²⁾

Fernblock® inhibits:

55% of superoxide anion (very few agents are active against superoxide anion)

10% of singlet oxygen

50% of lipid peroxidation

Reduced free-radical activity helps slow skin aging processes: skin develops fewer wrinkles, and is firmer, more toned.



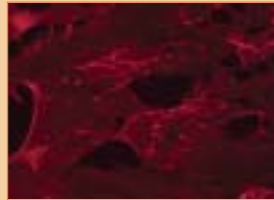
PRESERVATION OF SKIN ARCHITECTURE

Fernblock® prevents solar elastosis, structural changes in the dermis, and skin aging⁽³⁾

Control



UVA



UVA + Fernblock®



Preservation of fibroblasts



PROTECTION OF DNA

Solar simulator
without Fernblock®



Solar simulator
with Fernblock®



Fernblock® inhibits the formation of thymine dimers, lesions linked to cell mutation and development of skin cancer⁽⁴⁾



PHOTOPROTECTION ACTIVITY

Solar simulator
without Fernblock®



Solar simulator
with Fernblock®



Fernblock® reduces the number of sunburn cells in skin exposed to UV radiation⁽⁵⁾ and erythema⁽⁶⁾:
increases MED x 3, MPD x 7



PUVA exposure⁽⁶⁾

without Fernblock® | after administration of Fernblock®

1. Middlekamp M. et al., J. Am Acad Derm, 2004 ; 2. González S, Pathak MA., Photoderm, Photoimmun & Photomed, 1996; 3. Alonso-Lebrero JL. et al., J. Photochem Photobiol, 2003; 4. Middlekamp M. et al., J. Am Acad Derm, 2004 (a); 5. Middlekamp M. et al., J. Am Acad Derm, 2004 (b); 6. González S. et al., Photoderm, Photoimmun & Photomed, 1997