PHYTOTISS™ BLF

Protect Your Skin against Damages caused by Blue Light

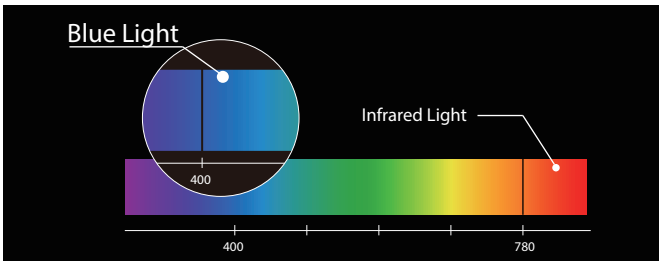
Find plant extract solution with

DermaLab

How to keep the healthy skin from Blue light

What is Blue Light ?

Light consists of ultraviolet rays, visible rays, and infrared rays. Visible rays occupy 50% of the light spectrum and are the only light that can be seen by the human eye. Among them, blue light corresponding to the wavelength of 400 to 450 nm is called high energy visible light (HEV light or HEVL) because of its high energy. HEV Light is emitted not only by sunlight but also by digital devices used by modern people. The use of such devices in close proximity to the face for long periods of time has caused serious harm to the skin.



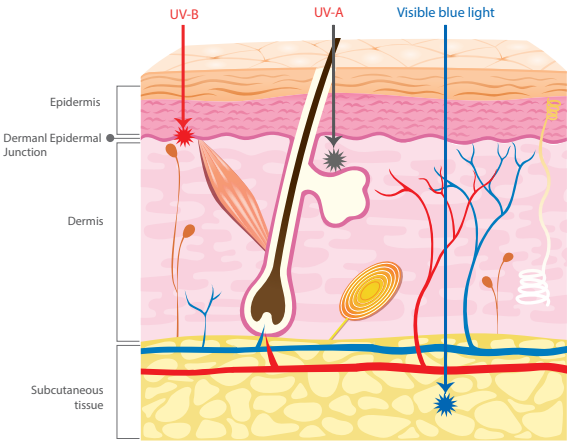
Blue Light and Skin Aging

Blue light penetrates more strongly than UV rays (UVA, UVB) and reaches the bottom of the dermis layer, causing cell damage in skin tissue. Reactive Oxygen Species(ROS) which is generated by continuous skin exposure to blue light, causes oxidative stress and decomposition of collagen, elastin, hyaluronic acid in skin dermal layer.

In epidermal layer, ROS reduces keratinocyte differentiation, weakens the skin barrier and delays recovery.

Blue light damages the skin tissue and promotes skin aging such as wrinkles, reduction of elasticity, and dryness of the skin

In addition to natural blue light, we are exposed to artificial blue light from digital devices (smart phones, PC monitors, TVs, etc.) that we use everyday. This condition does not cause visible immediate damage such as burns or pigmentation, but it causes damage from the skin tissue, leading to premature aging. Therefore, it is necessary to protect the skin of modern people enjoying digital life from blue light.



PHYTOTISS™ BLF Dendropanax Morbiferus Adventitious Root Extract

Based on the fact that the macular pigment protects the eye from blue light, through the screening of various plants capable of functioning as a macular pigment, we selected the Korean Dendropanax which was used for the gold coloring from the past. The roots of this plant are used in folk medicine because of healing properties. In order to obtain the roots of Korea Dendropanax continuously without environmental constraints, with plant tissue culture technology, we succeeded to induce an adventitious root of the Korean Dendropanax . Based on this technology, PHYTOTISS™ BLF was developed.

PHYTOTISS™ BLF makes healthy skin by protecting skin from damage caused by blue light and restores weakened skin barrier due to continuous exposure to blue light.

DermaLab's Plant Tissue Culture Technology : PHYTOTISS™

* The Korean Dendropanax is called 'tree ginseng' and is known as a panacea. The golden pigment obtained by scratching the tree is called mystic and used only for king's good. According to Korean Traditional Medicine, the Korean Dendropanax has anti- inflammation, blood circulation, anti-oxidant and cell regeneration effect.

MECHANISM

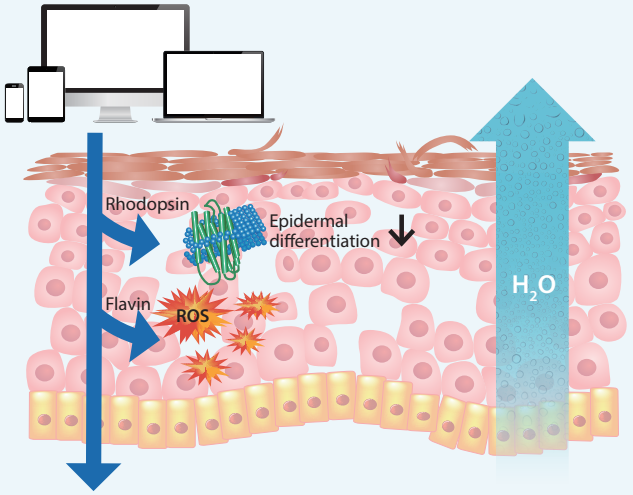
There are many kinds of photoreceptors in the skin that recognize and react to light.

Through the flavin, a photosensitizer, blue light induces the formation of reactive oxygen species (ROS) in human keratinocytes mitochondria and most of them is superoxide. So, it induces mitochondrial DNA damage, reduces the ATP production and decreases the cell vitality.

When the skin is exposed to blue light continuously, the differentiation and proliferation of epidermal keratinocytes are reduced by activation of photoreceptor, Rhodopsin. As a result, skin barrier is weakened and moisture balance is broken.

This accelerates skin aging such as increased skin roughness and dryness.

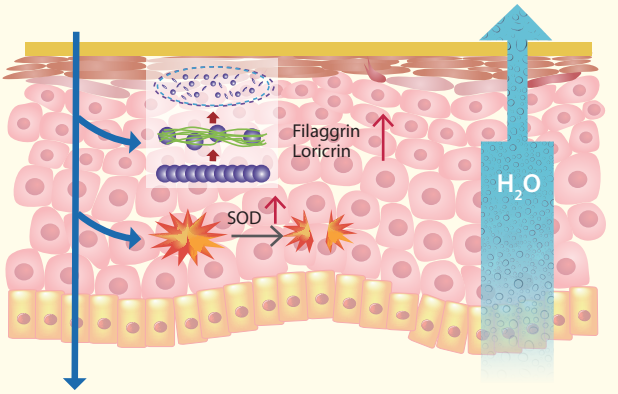
Disrupted skin barrier by Blue light



Increased ROS production
Mitochondrial DNA damage
Reduction of epidermal differentiation

Cell vitality weakness
Skin Roughness / Dryness
Premature Ageing

Improved skin barrier by PHYTOTISS™ BLF



Increase SOD activity
Increase filaggrin and loricrin

Antioxidant effect
Skin barrier enhancement
Anti-Ageing

PHYTOTISS™ BLF keeps the healthy skin against negative effect by blue light.

1. PHYTOTISS™ BLF stabilizes the cell vitality through the antioxidant effect.
2. PHYTOTISS™ BLF improves the skin barrier by inducing the differentiation of epidermal cells.

IN-VITRO TEST

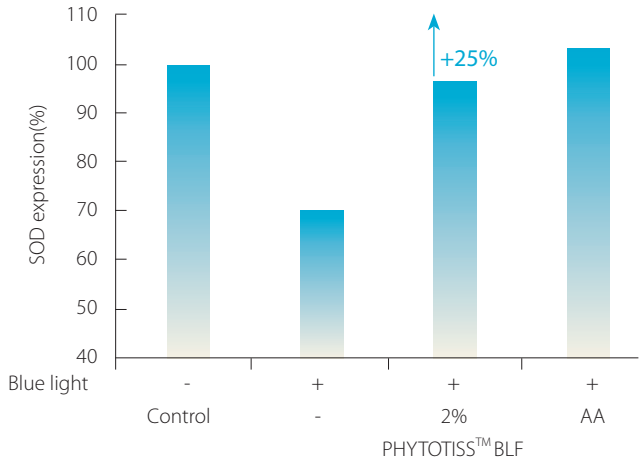
ANTIOXIDANT EFFECT

PHYTOTISS™ BLF INCREASES THE SOD EXPRESSION

Superoxide dismutase(SOD) is an enzyme that alternately catalyzes the dismutation of the superoxide. SOD is an important antioxidant defense in nearly all living cells exposed to oxygen.

+25% SOD

Protocol: *Human Epidermal Keratinocyte (HaCaT) cultures were incubated during 48 hours (at 37℃, CO_2: 5%) in presence of 2% PHYTOTISS™ BLF and were exposed to blue LED light (450nm, 54W) for 2 hours. The expression levels of mRNA were analyzed by RT-PCR. AA: Ascorbic acid 20ppm*



SKIN BARRIER FUNCTION ENHANCEMENT

PHYTOTISS™ BLF INCREASES THE FILAGGRIN EXPRESSION

Filaggrin undergoes further processing in the upper stratum corneum to release free amino acids that assist in water retention. It is a structural protein that is fundamental in the development and maintenance of the skin barrier.

+30% FLG

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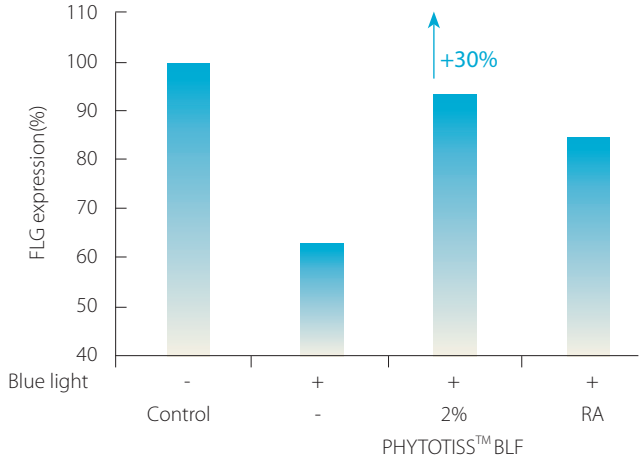
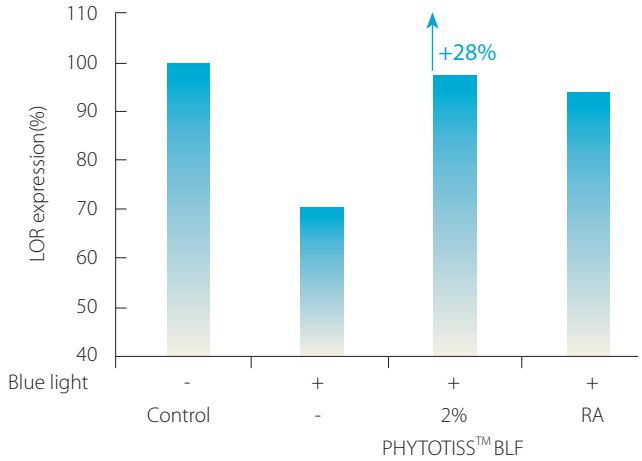


PHYTOTISS™ BLF INCREASES THE LORICRIN EXPRESSION

Loricrin is a major protein component of the cornified cell envelope found in terminally differentiated epidermal cells. It contributes to the protective barrier function of the stratum corneum.

+28% LOR

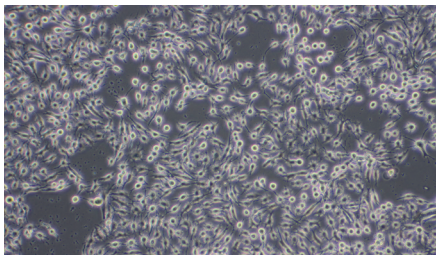
Protocol: *: Human Epidermal Keratinocyte (HaCaT) cultures were incubated during 48 hours (at 37℃, CO_2: 5%) in presence of 2% PHYTOTISS™ BLF and were exposed to blue LED light (450nm, 54W) for 2 hours. The expression levels of mRNA were analyzed by RT-PCR. RA : Retinoic acid 50ppm*



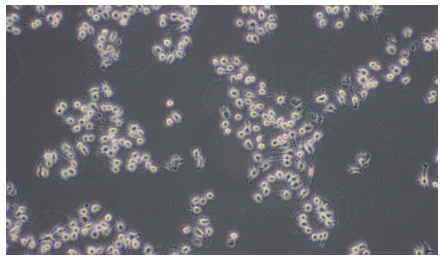
IN-VITRO TEST

CELL PROLIFERATING EFFECT

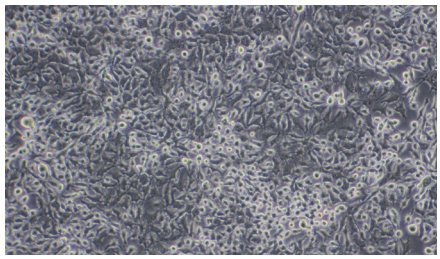
PHYTOTISS™ BLF ENHANCES THE PROLIFERATION OF KERATINOCYTE



Control



Blue light



Blue light +
PHYTOTISS™ BLF 2%

Protocol *Human Epidermal Keratinocyte (HaCaT) cultures were incubated during 48 hours (at 37°C, CO_2: 5%) in presence of 2% PHYTOTISS™ BLF and were exposed to a blue LED light (450nm, 54W) for 2 hours. Images were captured by the Optivision Image Capture system.*

IN-VIVO TEST

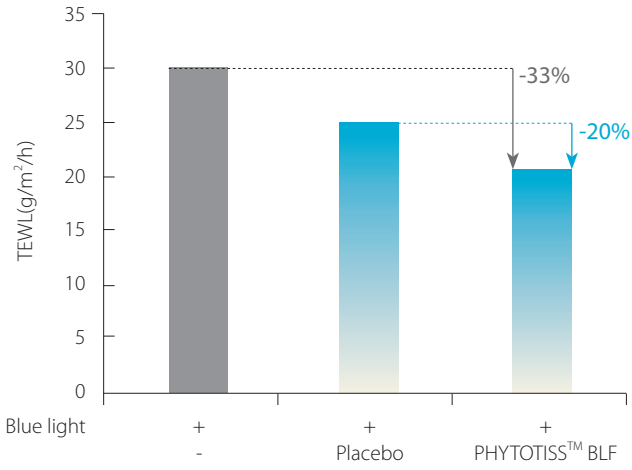
SKIN BARRIER ENHANCEMENT

PHYTOTISS™ BLF REDUCES THE TEWL OF SKIN

Method : Measurement of TEWL (Trans epidermal water loss) upon blue light
2 hours exposure to blue LED light (450nm, 54W) after single application of 3% PHYTOTISS™ BLF vs Placebo and measurements. TEWL values were evaluated by Dermalab Combo® (Cortex Technologies, Denmark).

With 2% PHYTOTISS™ BLF
- 33% of TEWL vs Non-treatment
- 20% of TEWL vs Placebo

Result : PHYTOTISS™ BLF reduces the TEWL of skin by blue light. It improves the function of skin barrier.



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Cosmetic activities	• Increase SOD expression • Increase FLG expression • Increase LOR expression • Cell Proliferation Enhancement • Skin Barrier Enhancement
INCI name	Water (and) Butylene Glycol (and) Hydroxypropyl Cyclodextrin (and) 1,2-Hexanediol (and) Dendropanax Morbiferus Adventitious Root Extract
Recommended % of use	2% ~