SUNSHINE VITA 1000

Vitamin D like Epidermal Energizer

DermáLab
(주) 더마랩

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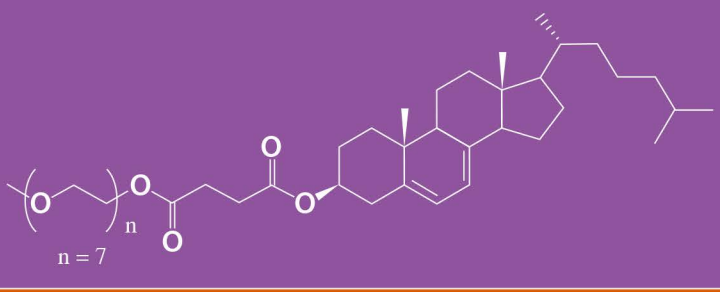
SUNSHINE VITA 1000 is an ingredient combining poly (ethylene glycol) with 7-Dehydrocholesterol known as pro-vitamin D by PEGnology. Poly (ethylene glycol) used in the PEGylation is one of biocompatible polymer authorized by FDA, it has hydrophilic properties and contributes to increase the solubility in aqueous solution and to maximize effectiveness.

Vitamin D is produced naturally in the process of exposure to sunlight. But, More than 50% of the world's population is experiencing a shortage of vitamin D. This phenomenon is due to the changed lifestyle of modern people.

SUNSHINE VITA 1000 functions like vitamin D in the skin by promoting the differentiation of epidermal cells and inducing the generation of new cells.

Active compound of SUNSHINE VITA 1000

Structure	
INCI Name	Methoxy PEG-7 Dehydrocholesteryl Succinate
Chemical Name	Succinic acid 17-(1,5-dimethyl-hexyl)-10,13-dimethyl-2,3,4,9,10,11,12,13,14,15,16,17-dodecahydro-1H-cyclopenta[a]phenanthren-3-yl ester methoxy-polyethoxy ester
Molecular Formula	$C_{46}H_{78}O_{11}$
Molecular Weight	807.1 g/mol
Appearance	White to pale brown waxy type

Vitamin D deficiency in the skin is increasing more and more.

Causes of vitamin D deficiency

01 Increment of modern people's indoor activities

02 Increment of sunscreen usage

03 Reduction of vitamin D production capacity with aging

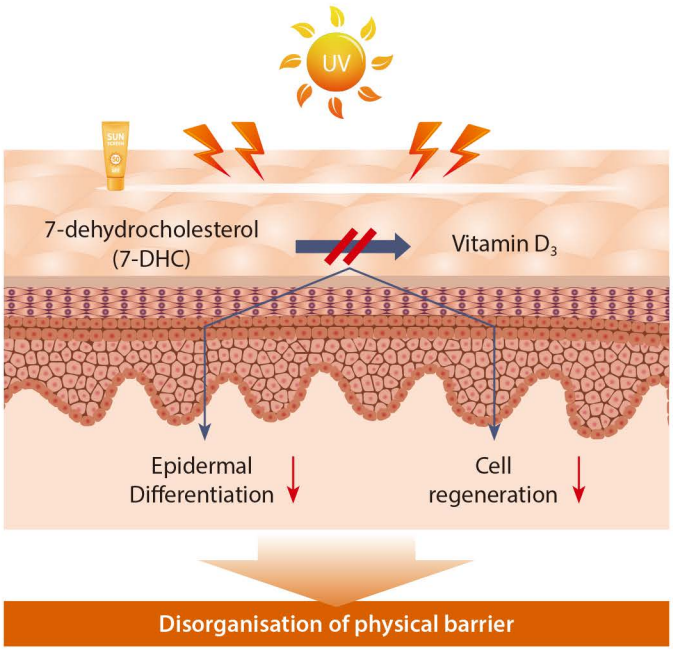
The solution of vitamin D deficiency in the skin is SUNSHINE VITA 1000

MECHANISM

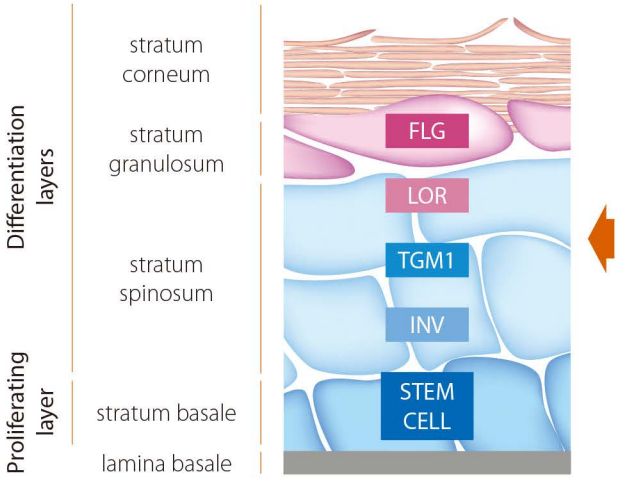
Vitamin D deficiency not only causes imbalance in intracellular calcium levels in the Epidermal, but also reduces keratinocyte differentiation and regeneration.

In this way, it results in a breakdown of the physical barrier of the epidermis.

SUNSHINE VITA 1000 has been developed to recover the barrier functions of the skin weakened by vitamin D deficiency.



Epidermal Differentiation & Cell Regeneration



Differentiation proteins

FILAGGRIN (FLG)	a pivotal role protein in skin barrier function
LORICRINE (LOR)	a main protein in the formation of the cornified envelope
TRANSGLUTAMINASE 1 (TGM1)	ensures assembly of proteins that make up the cornified envelope
INVOLUCRINE (INV)	involved in forming the cornified envelope

Cell Regeneration

By the activation of epidermal stem cells

Epidermal Differentiation

The primary function of the epidermis is to produce the stratum corneum which forms a semi-permeable protective layer. It is formed through the differentiation of keratinocytes from the basal layer to the skin's surface layer. Many proteins and enzymes are involved at each stage of keratinocyte differentiation.

Epidermal Cell Regeneration

Epidermal stem cells are of major importance for skin regeneration and tissue engineering. Wounding activates stem cells in the epidermis to proliferate and send their progeny to re-epithelialize the wound.

SUNSHINE VITA 1000 restores the vitality of the skin

1. It helps to improve the skin barrier by inducing the differentiation of epidermal cells.
2. It enhances the regeneration of damaged skin cells, and improves the resilience of skin.

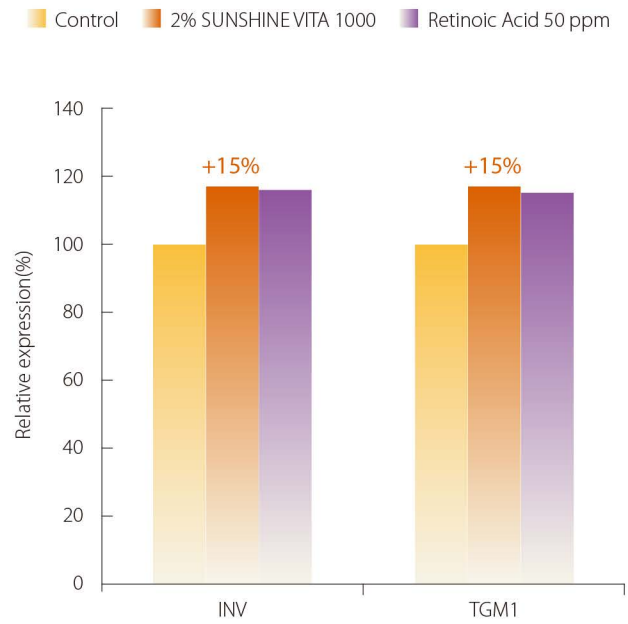
IN-VITRO TEST

EPIDERMAL DIFFERENTIATION EFFECT

SUNSHINE VITA 1000 INCREASES THE EXPRESSION OF INVOLUCRIN & TRANSGLUTAMINASE-1

SUNSHINE VITA 1000 increases INV expression by 15%.

SUNSHINE VITA 1000 increases TGM1 expression by 15%.

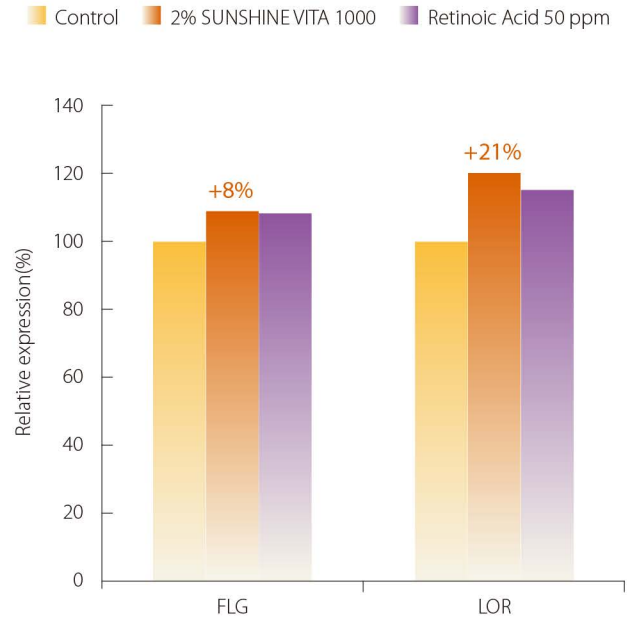


Protocol
Human epidermal keratinocyte (HaCaT) cultures were incubated during 36 hours (at 37℃, CO_2: 5%) in presence of 2% SUNSHINE VITA 1000. The expression levels of mRNA were analyzed by RT-PCR.

SUNSHINE VITA 1000 STIMULATES THE EXPRESSION OF FILAGGRIN & LORICRINE

SUNSHINE VITA 1000 increases FLG expression by 8% .

SUNSHINE VITA 1000 increases LOR expression by 21% .

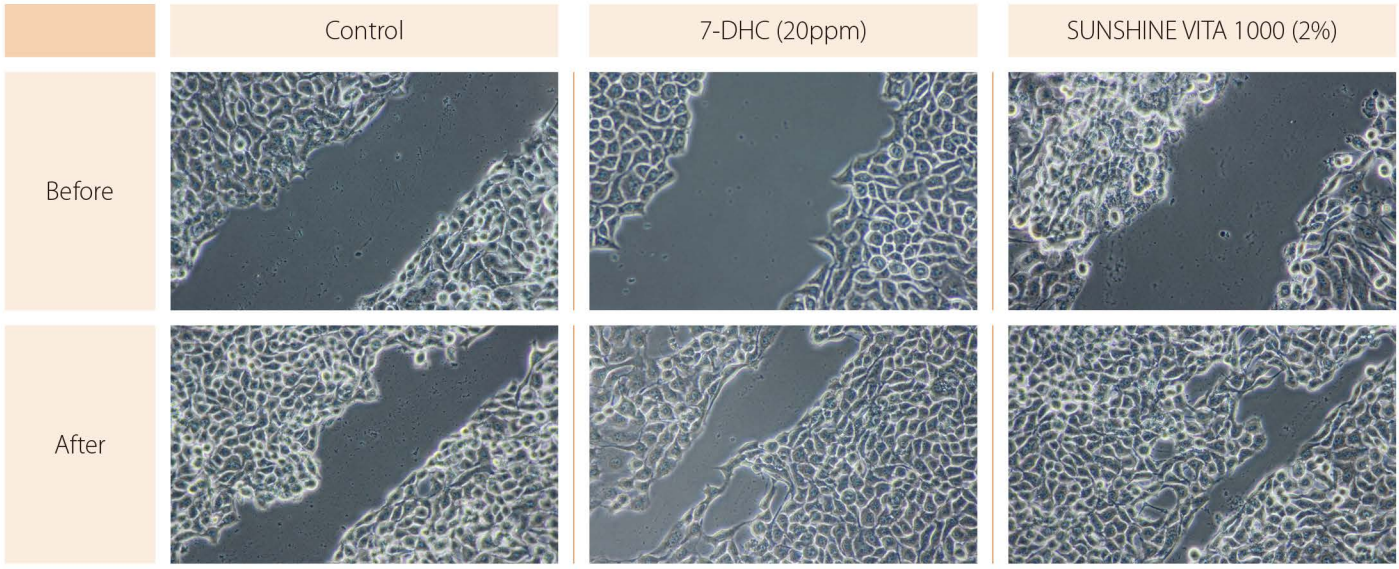


Protocol
Human epidermal keratinocyte (HaCaT) cultures were incubated during 36 hours (at 37℃, CO_2: 5%) in presence of 2% SUNSHINE VITA 1000. The expression levels of mRNA were analyzed by RT-PCR.

IN-VITRO TEST

CELL REGENERATION EFFECT

SUNSHINE VITA 1000 PROMOTES THE REGENERATION OF EPIDERMAL CELLS



<By wound healing assay>

Protocol
Scratch wounds were created in human epidermal keratinocyte (HaCaT) using a pipette tip (0.1–10uL). Cells were incubated during 18 hours (at 37℃, 5% CO_2) in presence of 2% SUNSHINE VITA 1000. Wound width was estimated using an inverted microscope.

Cosmetic activities	• Enhancing Transglutaminase expression • Enhancing Filaggrin expression • Enhancing Involucrin & Loricrin expression • Stimulating Epidermal differentiation • Reinforcing Cell regeneration
INCI name	SUNSHINE VITA 1000 Water (and) Butylene Glycol (and) Alcohol (and) Phenoxyethanol (and) Ethylhexylglycerin (and) Methoxy PEG-7 Dehydrocholesteryl Succinate SUNSHINE VITA 1000 (HD) Water (and) Butylene Glycol (and) Alcohol (and) 1,2-Hexanediol (and) Methoxy PEG-7 Dehydrocholesteryl Succinate
Recommended % of use	SUNSHINE VITA 1000 2% SUNSHINE VITA 1000 (HD) 2%

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