



Vitamin D3-like

A vegan natural
stimulator of VDR proteins
Your best ally for modern
lifestyle

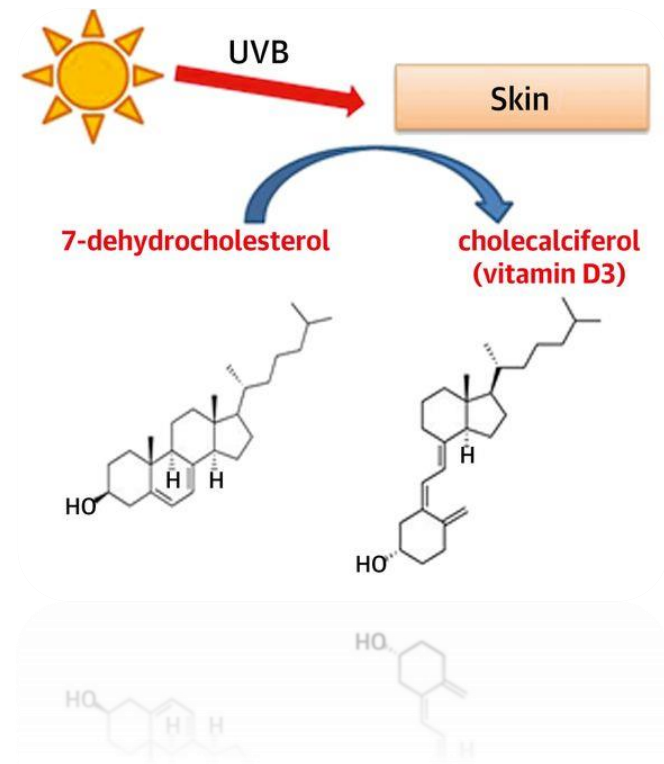


Vitamin D

Many nonclassic roles for vitamin D have been investigated in recent decades in the wake of the discovery of vitamin D receptors (VDR) on many tissues other than bone and the small intestine, including the pancreas, kidney, skin, and selected cells of the immune system.

The “vitamin D system,” comprising the biologically active form of vitamin D and the VDR, has numerous pleiotropic effects and regulates approximately 3% of the human genome

Most of the vitamin D humans rely upon is produced in the skin through exposure to sunlight and, ironically, the central importance of vitamin D to human physiology and health has been appreciated most acutely in recent decades as ever-increasing numbers of the world’s people have been deprived of regular sun exposure because of urbanization and the wide-scale adoption of indoor lifestyles or using of SPF cosmetic products.



Vitamin D, deficiency factors

Vitamin D insufficiency affects almost 50% of the population worldwide (1). An estimated 1 billion people worldwide, across all ethnicities and age groups, have a vitamin D deficiency (2).

This pandemic of hypovitaminosis D can mainly be attributed to lifestyle and environmental factors that reduce exposure to sunlight, which is required for ultraviolet-B (UVB)-induced vitamin D production in the skin

The body's own production of vitamin D in the skin also depends from the following geographic, climatic and cultural factors:

latitude

clothing

time of year and time of day

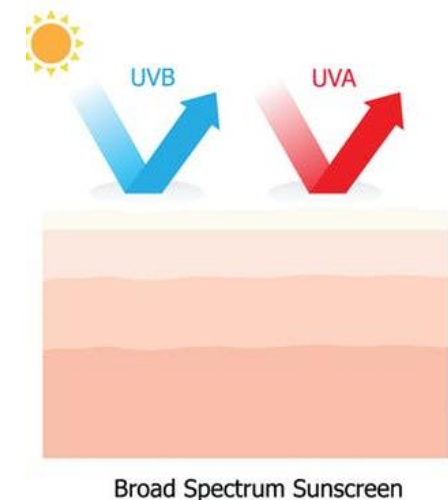
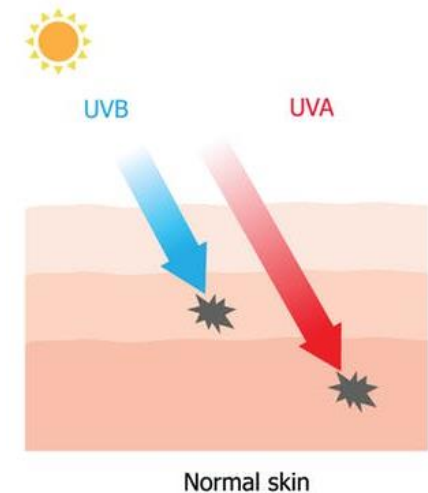
skin type

use of sunscreens

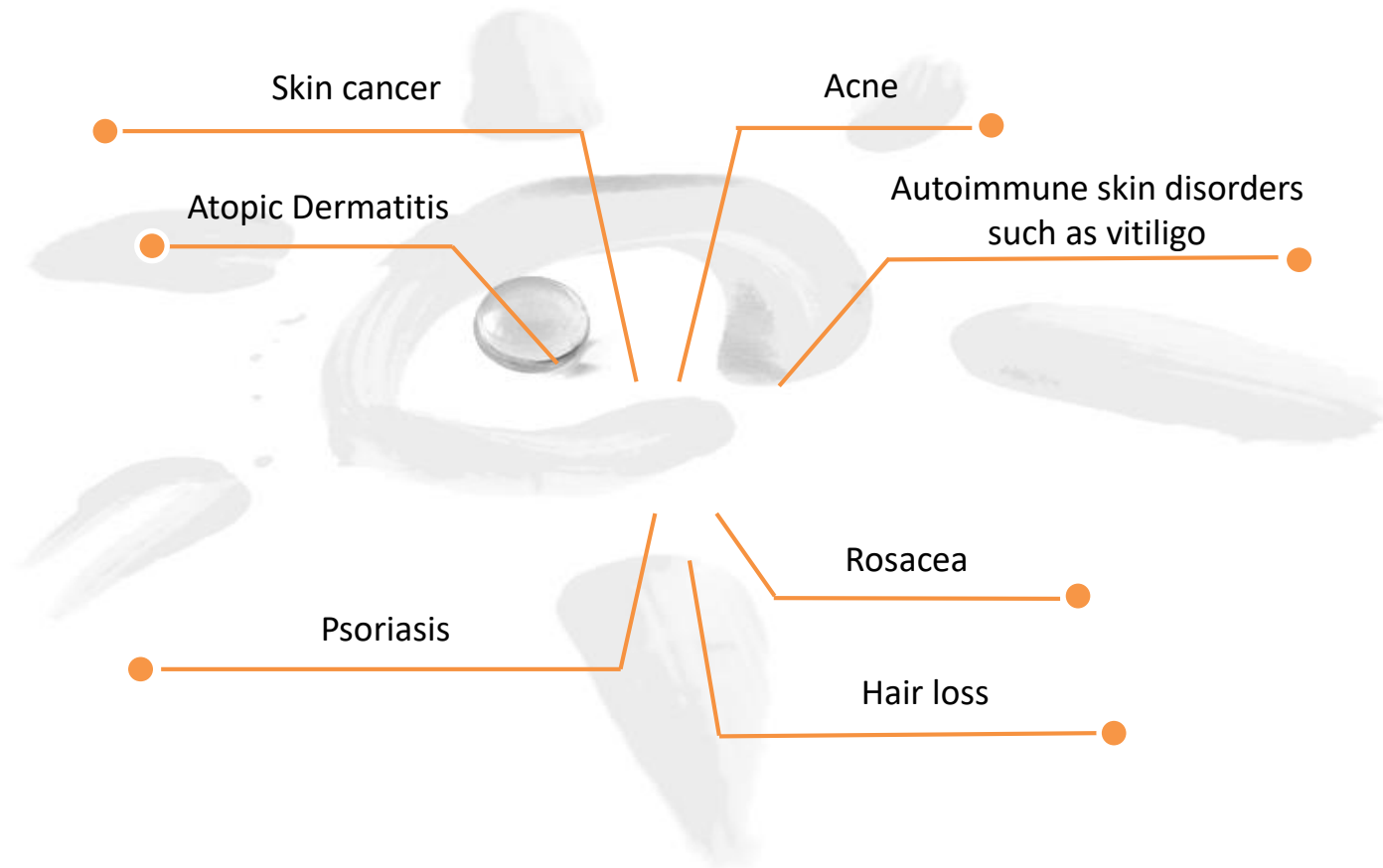
time spent outdoors

weather conditions

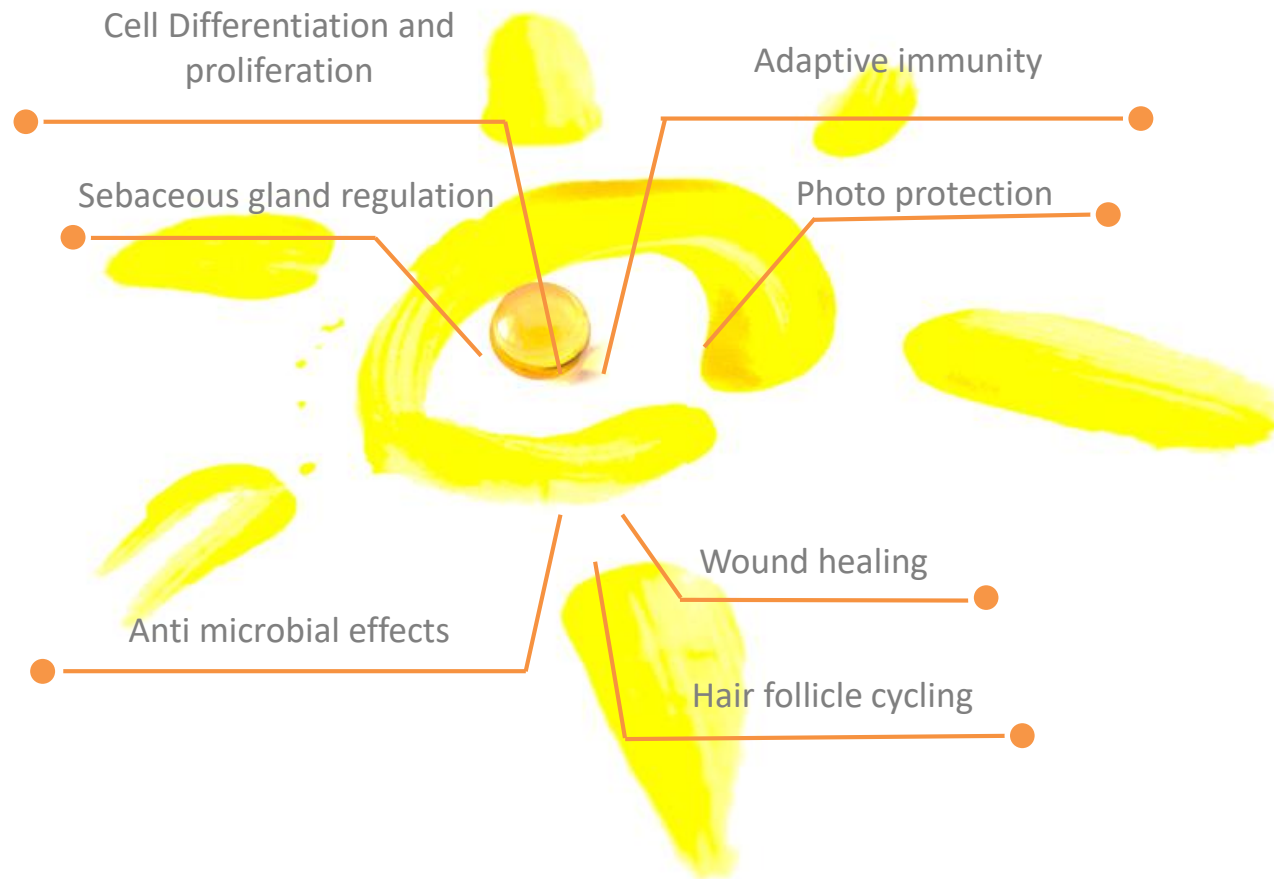
age of the person



Vitamin D, deficiency and skin diseases

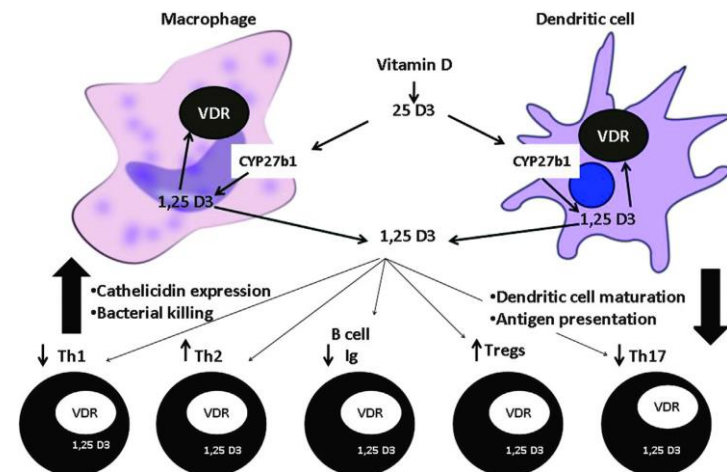


Vitamin D, skin benefits



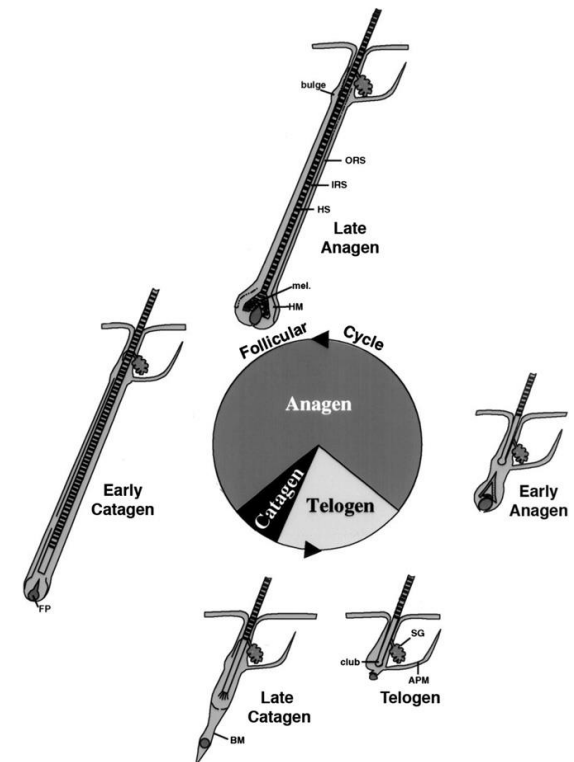
Vitamin D, VDR stimulation and skin benefits

- Skin differentiation and proliferation:
 - Calcitriol exerts its biological effects by binding and activating the nuclear vitamin D receptor (VDR) which is involved in the control of gene expression.
 - The epidermis is the major source of vitamin D for the body. Indeed, keratinocytes in the epidermis are able to metabolize vitamin D via the vitamin D receptor (VDR), and secondary metabolites are produced to regulate epidermal proliferation in the basal layer (basal stratum). Thus, vitamin D-activated Vitamin D (VDR) receptor or agonist components participate in controlling the regulation of cell differentiation in the skin.
 - Lacking the VDR shows defective epidermal differentiation manifesting as reduced levels of involucrin and loricrin and loss of keratohyalin granules (3), decreased lipid content of the lamellar bodies leading to a defective permeability barrier (4), and a defective response of the innate immune system to wounding (5).
- Cutaneous innate immunity:
 - Early studies of vitamin D and the immune system demonstrated VDR expression in both T and B cells (6).



Vitamin D, VDR stimulation and skin benefits

- Hair follicle cycling:
 - In vitro studies have supported the concept that VDR may play a vital role in the postnatal maintenance of the hair follicle. Mesodermal papilla cells and the outer root sheath (ORS) epidermal keratinocytes express VDR in varied degrees in correlation with the stages of the hair cycle. In both the late anagen and catagen stages there is an increase in VDR, which is associated with decreased proliferation and increased differentiation of the keratinocytes. These changes are thought to promote the progression of the hair cycle (7).
 - Alopecia is a well-known part of the phenotype of many patients with mutations in their VDR (8), a syndrome known as hereditary vitamin D resistant rickets (HVDRR).
 - Hairless mutations in humans (9) VDR mutations, with regard to the morphologic changes observed in hair follicle cycling.



Vitamin D3-like, origin

The vine is an ancient miracle plant both edible and cosmetic ...

Well known since antiquity, Greek mythology has even devoted it to the rank of divinity under "Dionysos", wine is a millenary nectar, the Romans also dedicated it as divinity under "Bacchus".

In antiquity, the cultivation of grape has been developed in the Mediterranean area; oenology is the science of transforming grape juice by a biotechnological process, vinification (alcoholic fermentation).

Today, the culture of the vines and the production of wines are worldwide.

Using a biotechnological process applied to the grapes EPHYLA extracts the Vitamin D3 -LIKE



In vitro, VDR stimulation

MATERIALS & METHODS :

On a model of a normal dermal monolayers human keratinocyte.

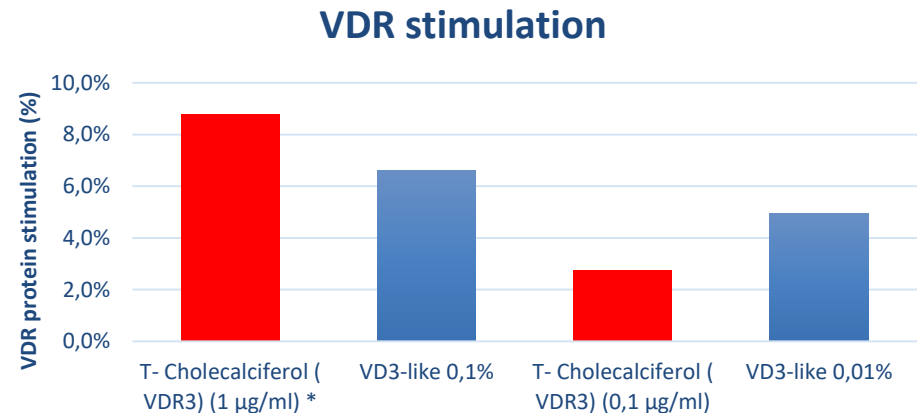
Keratinocytes are incubated at 36,5°C during 48h, under humid atmosphere and 5 % of CO₂, in presence of the active ingredients.

The positive control is carried out with normal dermal monolayer human keratinocyte using regular medium in the presence of Cholecalciferol

At the end of the incubation period, the MTT assay is carried out for assessing cell metabolic activity viability essay.

Then, after cell culture lysis, the dosage of VDR is obtained using a specific Elisa kit.

VD3-LIKE at a dose of 0. 1% stimulates at 75% the production of VDR receptors compare to Cholecalciferol (VDR3) in a model of normal humain keratinocyte cultures



* Cholecalciferol is toxic at higher concentration.

In vitro, free radical scavenging activity

MATERIALS AND METHOD:

Model: Acellular in vitro assay using 1,1-diphenyl 2-picrylhydrazyl (DPPH)

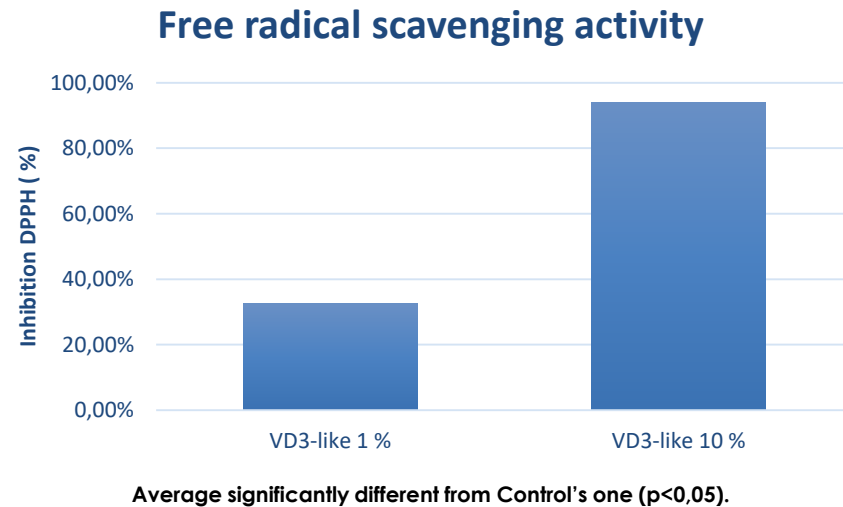
Protocol: DPPH solutions were incubated for 30 minutes in absence (control) or in the presence of increasing concentrations of VD3-Like

At the end of the incubation period, the absorbance of the reaction media at 520 nm was measured and the free radical scavenging activity was calculated.

Each experimental condition was performed (at least) in triplicate (n = 3).

Inhibition induced by Vitamin D3-LIKE:

- 32 % of the radical-free activity, dosed at 1% in finished product
- 94 % of the activity of free radicals, dosed at 10% in finished product

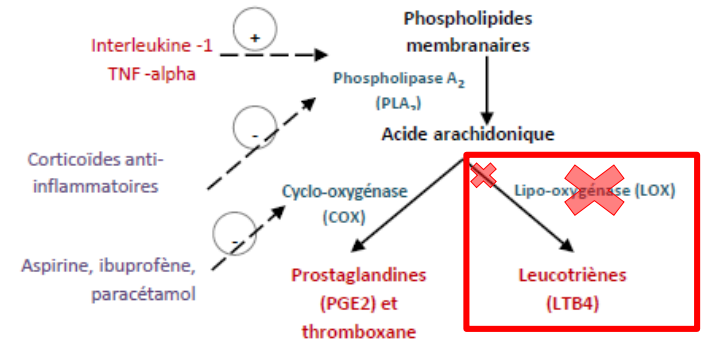


In vitro, Anti-inflammatory action

MATERIAL AND METHOD :

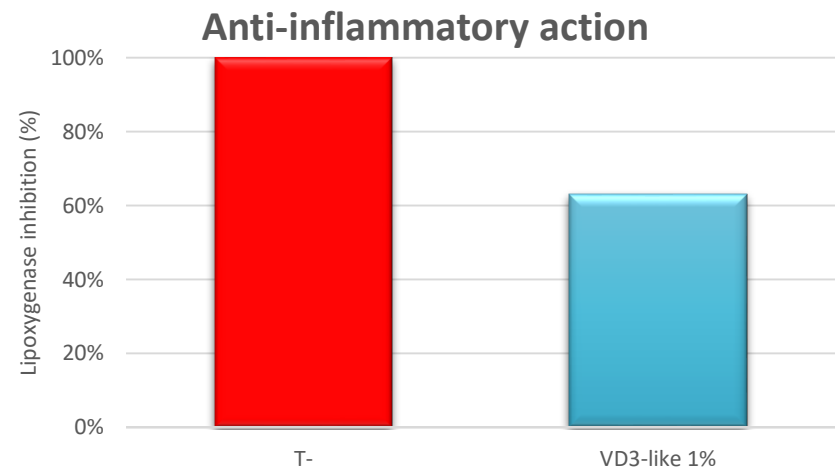
A destressing (anti-inflammatory) action can be demonstrated by the inhibition of the enzymes involved in the cascade of arachidonic acid, in particular Lipoxygenase.

The inhibitory activity of Lipoxygenase is studied by enzymatic analysis



Vitamin D3-like at a dose of 1% inhibits by almost 65% the activity of Lipoxygenase, the key enzyme of the inflammatory process. These results reflect an inhibition of the amplification of the inflammatory signal. Vitamin D3-like does not prevent the initiation of the biochemical mechanism of inflammatory reaction but inhibits the activity of Lipoxygenase, a key mediator of the inflammatory cascade. Thus, Vitamin D3-like does not trigger any side effects

Vitamin D3-like calms and soothes the cellular reaction triggered during stress



In vitro, anti-aging activity

MATERIALS & METHODS :

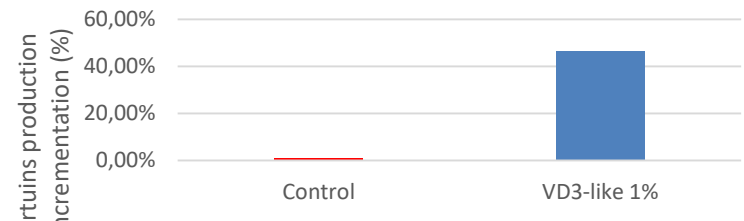
On a model of a normal dermal monolayers human fibroblasts.

Fibroblasts are incubated at 37°C during 1 hour, under humid atmosphere and 5 % of CO₂, with or without the active ingredient.

At the end of the incubation period, a HDACs (included Sirt I) specific fluorescent substrate, as well as all the co-factors which are necessary to the enzymatic reaction, are introduced in the culture mediums. Fibroblasts are incubated 60 additional minutes. The enzymatic reaction is stopped, and the deacetylase activity is assessed by reading the fluorescence signal. Tests evaluated each experimental condition in triplicate.

Vitamin D3-like, at a dose of 1%, boosts more than 45% the deacetylating activity of HDACs responsible for the ability of cells to preserve themselves from oxidative stress damage by protecting their genome

Deacetylating activity of HDACs (Sirt I included)



Average significantly different from Control's one (p<0,05).

Vitamin D3-like, technical data sheet

- INCI: Aqua & Sodium citrate & Saccharomyces/Grape ferment extract & Sodium benzoate
- CAS: 7732-18-5 & 6132-04-3 & ND & 532-32-1
- EINECS: 231-791-2 & 200-675-3 & ND & 208-534-8
- COSMOS ready ; CHINA Compliant; VEGAN compliant
- APPEARANCE: brownish orange liquid
- FORMULATION: soluble in aqueous phase
- STORE CONDITIONS: 18 months in a ventilated area
- DOSAGE: 1-2%
- TOLERANCE:
 - Cutaneous: non-irritant
 - Ocular: moderately irritant
 - Phototoxicity: non phototoxic
- Patented active ingredients



References

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