



# preventhelia®

*A pure concept that protects cells core from aging*

## Peptide born from preventive cosmetics



### Description

Tetrapeptide that prevents the damage caused directly or indirectly by UV radiation to DNA and proteins, preventing skin from photoaging.

### Appearance

Translucent solution containing 0.05% Diaminopropionoyl Tripeptide-33.

### INCI

Water (Aqua), Diaminopropionoyl Tripeptide-33, Caprylyl Glycol.

Preservative free.

### Properties

Fights the detrimental effects of UV radiation in human skin, protecting and repairing DNA, thus avoiding the appearance of premature aging signs.

### Applications

**preventhelia®** can be incorporated in daily cosmetic formulations where a photoprotective effect is desired. Also recommended for sun care products.

**Dosage** 0.5-5%

### Solubility

Water soluble.

## Promotes the DNA repair system capacity

### Science

UVA and UVB cause different biological effects on the skin. UVA radiation penetrates the epidermis resulting in damage to the dermis. Furthermore, UVA is mainly responsible for indirect DNA damage. Meanwhile, UVB is mostly absorbed in the epidermis and its main mechanism of action is the direct interaction with DNA via induction of DNA damage. In the aging process, the various DNA repair systems decrease their ability, as a result of the accumulation of mutagenic DNA photoproducts.

Reactive Carbonyl Species (RCS) are potent mediators of cellular carbonyl stress originating from chemical processes. *Trans*-4-hydroxy-2-nonenal (4-HNE) is one of the most abundant and cytotoxic of the RCS. HNE reacts with a variety of nucleophilic sites in DNA and proteins, generating various types of adducts. Intracellular RCS are suggested to play an important role in oxidative stress through their inhibitory effect on DNA repair mechanisms as well as on induction of DNA damage through its direct interaction with repair proteins.

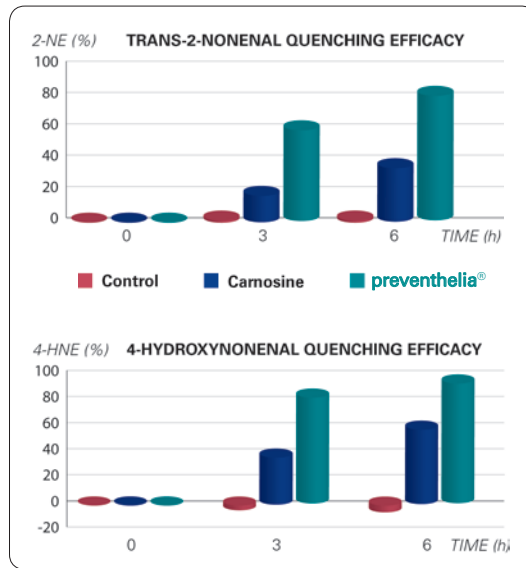
**preventhelia®** is a tetrapeptide born from preventive cosmetics that protects skin cells from UVA-induced DNA damage and is able to promote the DNA repair system capacity, providing a complete skin protection of intrinsic and extrinsic aging.



# In vitro efficacy

## 1. QUENCHING ABILITY

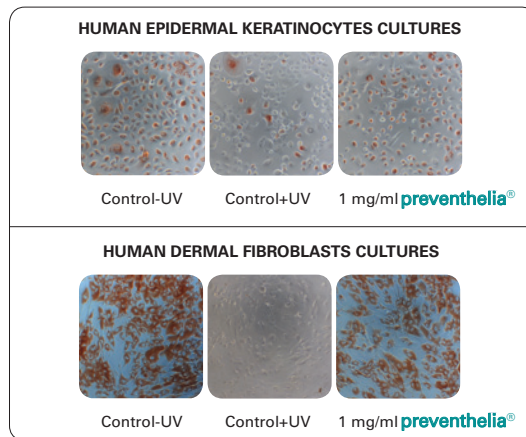
Study of the quenching activity of **preventhelia®** towards *trans*-2-nonenal (2-NE) and 4-hydroxynonenal (4-HNE). For each experiment a 20-fold excess solution of **preventhelia®** respect to the aldehydes was prepared.



**preventhelia®** quenched 2-NE by 82.6% and 4-HNE by 95.3% after 6 hours of treatment. The results obtained by **preventhelia®** were superior to the quenching ability of carnosine.

## 2. PHOTOPROTECTIVE EFFECT

The protective activity of **preventhelia®** on human epidermal keratinocytes (HEKa) and human dermal fibroblasts (HDFa) was tested in the presence of a cytotoxic dose of simulated solar light.

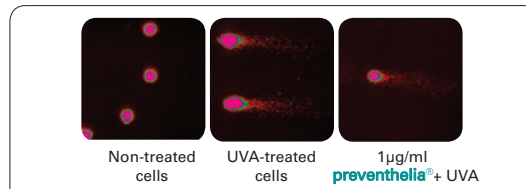


**92% increase in cell viability**

## 3. DNA CARE

### • DNA Protection

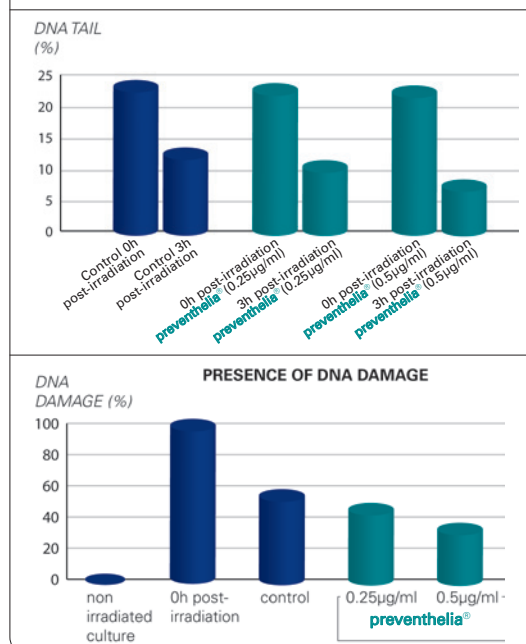
Comet assay was used for analysing and quantifying DNA damage in human melanocytes.



**preventhelia®** increased cell viability by more than 13,000% respect to irradiated control cells

### • DNA Repair

Evaluation of the **preventhelia®** effects in cellular DNA repair systems on human dermal fibroblasts irradiated with UVB. Immediately after irradiation, cells were exposed to different concentrations of **preventhelia®**.



**preventhelia®** showed an inherent photoprotection capacity against UVA radiation

**DNA tail generated was reduced on preventhelia® treated cells**

**3 hours after irradiation, the DNA repair capacity increased in presence of preventhelia®**

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