

juveleven™

peptide

Guardian of genomic integrity



- ★ **2013 - Silver**
In-cosmetics Asia, Innovation Zone Best Ingredient
- ★ **2014 - Anti-aging**
The China Personal Care & Cosmetics Innovations



Cell rejuvenation by over 10 years



Description

Hexapeptide that mimics the activity of FOXO3a (member of the Forkhead box transcription factors), which is involved in cell repair, renewal and longevity. **juveleven™ peptide** protects DNA from damage, stimulates its natural repair pathways and reverts senescence in fibroblasts.

Appearance

Transparent solution containing 0.05% active ingredient.

INCI

Butylene Glycol, Water (Aqua), Acetyl Hexapeptide-51 Amide.

Preservative free.

Properties

juveleven™ peptide maintains genomic integrity by protecting and repairing DNA damage induced by several agents, and delays cellular senescence to ensure longer and healthier aging.

Applications

juveleven™ peptide can be incorporated into daily skin care formulations to protect the skin from DNA-damaging elements and enhance cellular longevity and vitality, contributing to younger looking skin.

Dosage 2%

Key element in preserving the vital code

Science

The maintenance of DNA integrity is essential for the proper functioning and survival of organisms. DNA strands suffer from the constant challenge of endogenous and exogenous genotoxic agents as well as replication errors. UV-induced lesions may result in the formation of cyclobutane pyrimidine dimers (CPDs), a well-known form of pyrimidine dimers. Such damage can distort the structure of the DNA, altering its transcription and replication. Checkpoint pathways monitor DNA structure and control cell-cycle arrest allowing for repair and continue progression if everything is correct, before a mistake can be propagated to daughter cells.

FOXO3a acts as a master regulator that determines cell fate once damage is detected. Depending on the severity of the damage, this key transcription factor forces a state of quiescence in cells signaling for repair of errors or apoptosis. The active form of FOXO3a increases the level of well known antioxidants, induces the expression of genes involved in DNA-damage repair and triggers cell death when necessary.

juveleven™ peptide imitates the activity of FOXO3a, increasing the expression of several genes involved in DNA repair pathways. It also provides protection to cells and rejuvenates fibroblasts, retarding their senescence.

Solubility

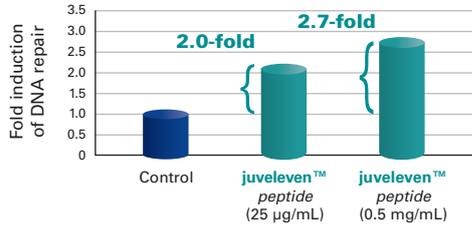
Water soluble.



In vitro efficacy

1. ACTIVATION OF DNA-REPAIR PATHWAYS

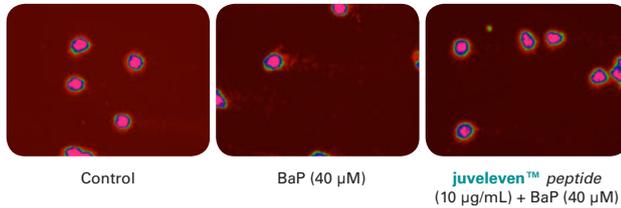
The efficacy of **juveleven™ peptide** in inducing DNA-repair pathway through the FOXO3a repair pathways was analyzed through a Host Cell Reactivation assay in primary human epidermal keratinocytes transfected with a UVC-damaged plasmid.



2. DNA-PROTECTIVE EFFECT AGAINST BaP

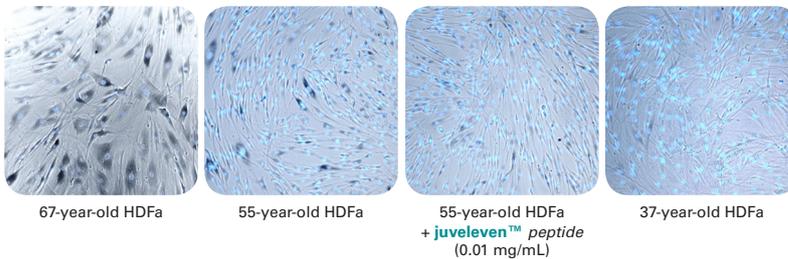
The protective effect that **juveleven™ peptide** provides against photoactivated benzo[a]pyrene (BaP) with UVA/visible light was evaluated by the comet assay in human normal fibroblasts, keratinocytes, and melanocytes.

FIBROBLASTS



3. REVERTING CELLULAR SENESCENCE

The senescence-associated β-galactosidase activity is one of the most commonly used biomarkers of cell aging. The efficacy of **juveleven™ peptide** was evaluated by the decrease in the number of senescent cells using a histochemical staining kit in primary human dermal fibroblasts (HDFa) from a 55-year-old donor.



juveleven™ peptide activates natural DNA repair pathways involving FOXO3a

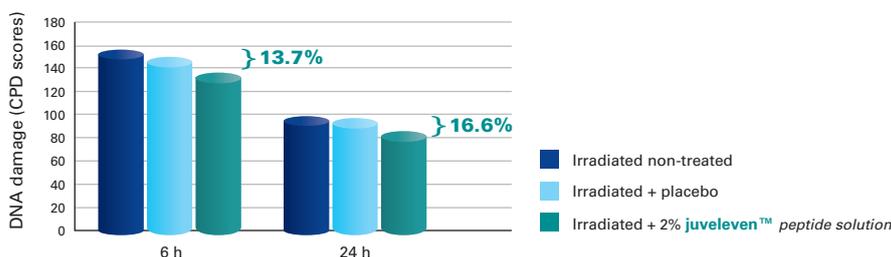
All three types of human skin cells were protected by **juveleven™ peptide** against BaP. A statistically significant DNA protective effect of 84.3%, 99.1% and 90.8% was obtained for fibroblasts, keratinocytes and melanocytes respectively.

Cellular senescence is reverted with **juveleven™ peptide**. The morphology of fibroblasts was recovered to that of 10 years prior.

In vivo efficacy

REPAIR OF UV-INDUCED DNA DAMAGE

Four test areas, two on the inner site of each forearm, were designated on 21 volunteers. Three of the test areas were irradiated with 2 MED UV-light. Then, two of these irradiated zones were treated with either a cream containing 2% **juveleven™ peptide solution** or a placebo cream. The third irradiated area and the fourth non-irradiated area were used as controls. A suction blister biopsy of each of the four areas was collected to analyse CPD presence at 6 hours after irradiation, and only three suction blisters for the irradiated zones were collected after 24 hours.



juveleven™ peptide diminishes UV-mediated DNA damage. A statistically significant reduction of pyrimidine dimers was induced by **juveleven™ peptide**, while placebo did not.