

Unilucent HR-14

Bioactivation of Skin Radiance and Firmness

Radiance is one of the most important factor for a youthful appearance of skin. Significant radiance enhancement requires to act simultaneously on two biological mechanisms:

- 1) Stimulation of skin firmness to improve its texture
 - > focused and intensified natural light reflection;
- 2) Prevention of protein oxidation to avoid light diffraction (brightness loss)
 - > uniformization of skin tone.

radiance

reGENERation

Focus on the product

Radiance: defined by the optical properties of the skin

Different skin structures determine the skin's optical properties. Parts of the incident light are diffused and reflected on the skin's surface. A part is absorbed, whereas other parts penetrate the skin and are diffused and reflected by various structures, e.g. melanin pigments in the epidermis or fibres in the extracellular matrix (ECM) of the dermis such as elastin and collagen. The way the light is diffused on the skin surface and in the deeper layers determines whether skin appears radiant or dull.

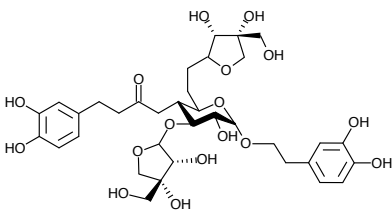
Skin loses its radiance upon time...

The natural aging process or several external factors such as UV radiation, air condition, unbalanced diet or insufficient sleep, can diminish important skin functions. The skin's antioxidant capacity or the synthesis of ECM proteins are reduced whereas the activity of ECM degrading enzymes is increased. As a result, skin texture is weakened, skin loses elasticity and its natural radiance.

There is a need for protection of the structures and for stimulation of the renewal mechanisms in order to maintain skin functionality and skin radiance.

Unilucent HR-14: a scientific discovery coming from the "resurrection plant" ...

Unilucent HR-14 is based on *Haberlea Rhodopensis*, a so called resurrection plant, meaning that it is able to survive total water loss for several years. Once watered, *Haberlea Rhodopensis* would rehydrate and resume complete functionality within short time. This survival strategy is based on the plant's ability to protect its vital functions by accumulating key molecules during its life. **Unilucent HR-14** is an *Haberlea Rhodopensis* extract that is extremely rich in a unique compound : myconoside, a polyphenol glucoside with outstanding antioxidant properties.



Myconoside

... to recover youth RADIANCE by waking up genes of firmness

Unilucent HR-14 has shown to maintain the fibroblast activity even under oxidative stress, by stimulating genes synthesis of elastin and other ECM markers (collagen VI, collagen XVI, MT1-MMP) in senescent fibroblasts. Furthermore, it prevents UV induced protein oxidation in the dermis. An *in vivo* study on 20 subjects showed a significant increase in skin elasticity and also in skin radiance compared to placebo already after two weeks.

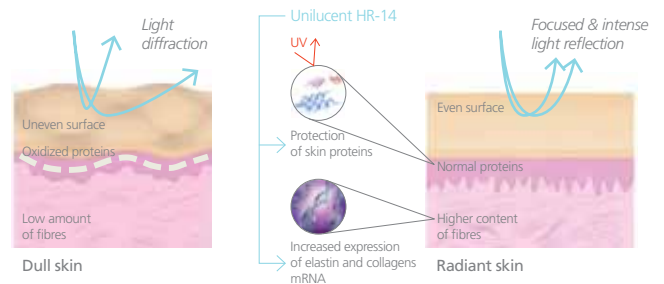
Biological activity

Mechanism - Dual Mode of Action

Natural aging and harmful external factors lead to a reduced antioxidant capacity and an excessive release of degrading proteinases, so called Matrixmetalloproteinases (MMPs). Oxidation and enzymatic degradation of the dermis proteins will therefore damage the skin structure. Moreover, the fibroblast activity is diminished, so the resynthesis of the important dermis components, e.g. collagen and elastin is impaired as well. The natural system of synthesis and degradation is out of balance and this results in a weakened skin texture and loss of radiance.

Unilucent HR-14 acts on two levels:

- **Stimulation** of the dermis genes expression, particularly elastin and three other ECM markers (collagen VI, collagen XVI, MT1-MMP), even under stressed conditions
- **Protection** of the dermis proteins from oxidation

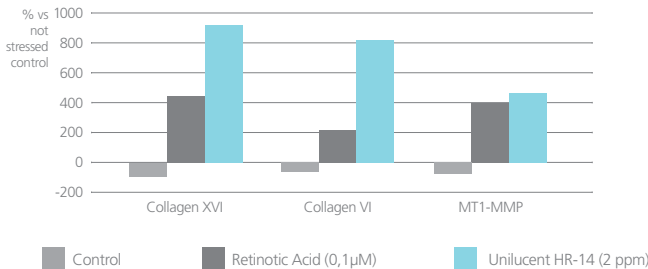


Stimulation of expression of firmness GENES (*in vitro* tests)

Unilucent HR-14 was tested for its ability to stimulate elastin, collagen VI, collagen XVI and MT1-MMP mRNA synthesis in normal human dermal fibroblasts stressed with H₂O₂. It was compared to retinol or retinoic acid as a benchmark.

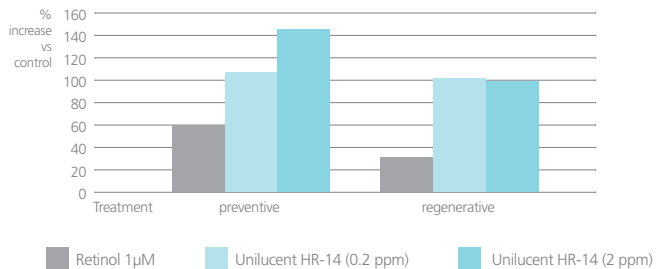
Preventive protocol: pre-incubation with tested compounds before stress and aging phase, re-seeding, and post treatment with tested compounds (on elastin and ECM markers genes expression tests). Regenerative protocol: stress and aging phase, re-seeding, post-treatment with tested compounds (on elastin gene expression test).

ECM markers mRNA in H₂O₂ stressed fibroblasts



Result: Unilucent HR-14 stimulates collagen XVI, collagen VI and MT1-MMP mRNA synthesis in presence of oxidative stress (preventive activity). This activity was superior to retinoic acid for each marker.

Elastin mRNA synthesis in H₂O₂ stressed fibroblasts



Result: Unilucent HR-14 stimulates elastin mRNA synthesis in presence of oxidative stress (preventive activity) and also after the stress phase (regenerating activity). Both activities were superior to retinol.

Additionally, an increase of +69%* of pro-collagen 1 release in H₂O₂ aged fibroblasts has been shown with 200ppm of Unilucent HR-14 versus control conditions. (*p<0.05 compared to control, Student's t Test)

Efficacy

Protection from dermal PROTEIN oxidation (ex vivo evaluation)

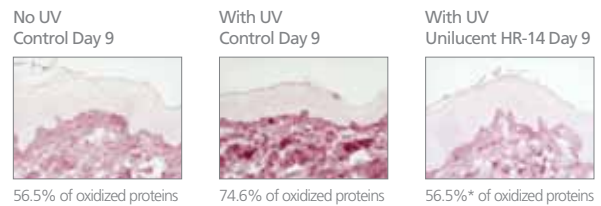
Unilucent HR-14 was tested for its ability to protect dermal proteins in human skin explants from UV-induced oxidation. It was compared to a non-irradiated and to a non-treated control.

Full thickness skin explants were treated with 3% Unilucent HR-14 or saline (control) solutions for 2 h/day for 8 consecutive days. On day 5 UV irradiation was conducted 2 h after treatment. Samples were taken on day 6 and day 9, they were assessed for the oxidative damage to proteins by immunostaining and digital image analysis (Olympus Cell[^]D software).

Result: Unilucent HR-14 significantly reduces UV-induced dermis protein oxidation. Interestingly, the UV-induced oxidation increase was completely eliminated in the explants treated with Unilucent HR-14.

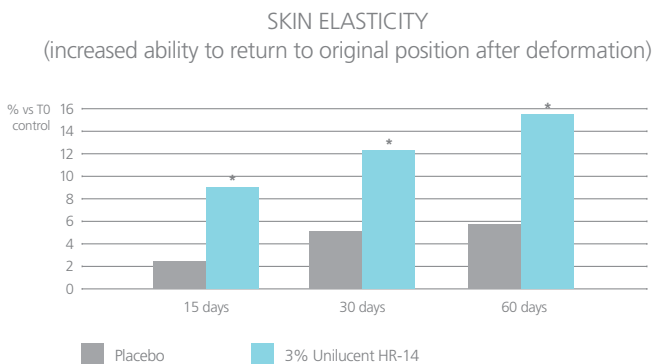
* $p < 0.01$ compared to irradiated control, Student's t Test

Protein oxidation in UV-irradiated dermis (result given in % area with oxidized proteins)

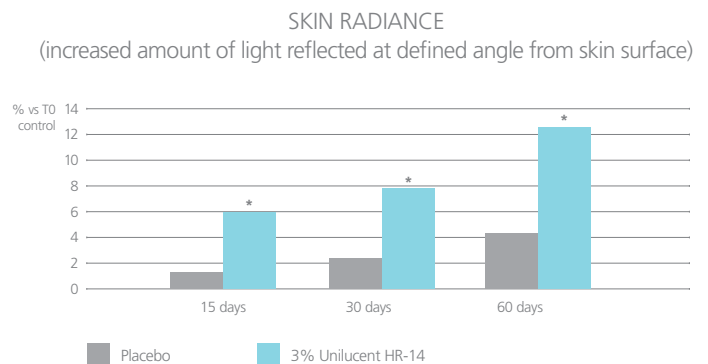


Increase in skin elasticity and skin radiance (clinical efficacy)

To check the efficiency of firmness genes expression increase and protein oxidation prevention under UV stress, a complete clinical test was performed. A cream containing 3% Unilucent HR-14 was compared to placebo in a double-blind study on 20 human volunteers. The products were applied twice per day for 60 days on either half of the face. Skin elasticity (Cutometer) and skin radiance (Spectrophotometer) were evaluated after 15, 30 and 60 days.



* $p < 0.01$ compared to irradiated control, Student's t Test



* $p < 0.05$ compared to placebo, Student's t Test

Result: Unilucent HR-14 significantly increases both skin elasticity (+9%) and skin radiance (+6%) already after 15 days. This further improves after 60 days, +15% in skin elasticity and +13% in skin radiance.

Summary

Technical information

INCI:	Water, Haberlea Rhodopensis Leaf Extract
Origin:	Plant extract
Certification:	Cosmos approved
Preservation:	Preserved with benzyl alcohol and dehydroacetic Acid
Appearance:	Clear to slightly opalescent, yellowish liquid
Solubility:	Water-soluble
Dosage:	1 – 3%
Processing:	Can be added at the end of the formulation process under stirring or homogenizing or can be heated for a short time with the water phase of a formulation. Formulate at pH between 5.5 and 6.5 and temperature below 40°C.

Claims

Claims:	Radiance enhancing, restructuring, firming, protecting from environmental stress
Applications:	Anti-aging skin care products, mature skin care, face/neck/body sculpting, eye contour, sun/after sun care, hand creams, skin radiance products, brightening products (in combination with other actives)

Induchem AG

Industriestrasse 8a
CH-8604 Volketswil
T +41 44 908 43 33
F +41 44 908 43 30
sales@induchem.com

Induchem USA, Inc.

535 Fifth Avenue, Floor 23
New York, NY 10017, USA
T 212-756-9918
F 212-756-9942
salesusa@induchem.com

Induchem (France) SAS

5, place de la Pyramide
Tour Ariane – Etage 33
La Défense 9
F-92088 Paris La Défense Cedex
T +33 (0)1 55 68 12 23
F +33 (0)1 55 68 10 00
ventes@induchem.com

www.induchem.com

induchem
companies

cosmetic engineering

This information and all further technical advice is based on our present knowledge and experience. However, it implies no liability or other legal responsibility on our part, including with regard to existing third party intellectual property rights, especially patent rights. In particular, no warranty, whether express or implied, or guarantee of product properties in the legal sense is intended or implied. We reserve the right to make any changes according to technological progress or further developments. The customer is not released from the obligation to conduct careful inspection and testing of incoming goods. Performance of the product described herein should be verified by testing, which should be carried out only by qualified experts in the sole responsibility of a customer. Reference to trade names used by other companies is neither a recommendation, nor does it imply that similar products could not be used.

LEAFLET-HR14-03.12-1000