

# Dermo-Restructuring Complex\*

Actions of the Redensity range Dermo-Restructuring Complex<sup>[1]</sup> on the dermis

THE BEST OF HYALURONIC ACID

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# Actions of the Redensity Range Dermo-Restructuring Complex<sup>[1]</sup> on the dermis

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## OBJECTIVE

The objective of this study is to evaluate the efficacy of a dermo-restructuring complex<sup>[1]</sup> – included in the Teosyal® Redensity range of products – on the dermis.

## INTRODUCTION

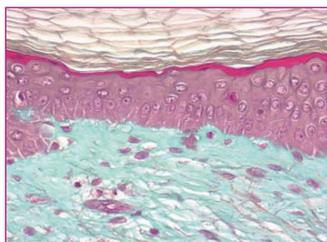
Solutions for skin revitalization, especially those used for mesotherapy, usually contain multiple compounds which the real effect on the dermis is hardly ever demonstrated.

The Dermo-Restructuring Complex<sup>[1]</sup> (DRC) is made of only 14 compounds, all from pharmaceutical grade, naturally present in the skin and non-allergenic. All of them were selected for their known biological properties and their synergic action on the global restructuring of the dermis<sup>[2-12]</sup>. The results shown below demonstrate the positive effects of the DRC on the dermis.

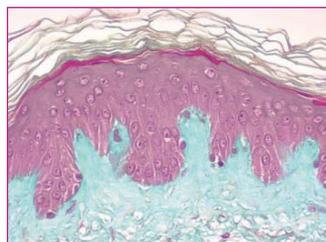
## TESTS AND RESULTS

The Dermo-Restructuring Complex<sup>[1]</sup> enriched with hyaluronic acid at 15mg/g is injected in skin explants maintained in survival conditions. After 9 days, which corresponds to the average response time of the dermis, the skin explants are cut into slices and colored by using several techniques depending on the action to be highlighted (Masson's Trichrome, Alcian blue, immunolabeling)<sup>[13]</sup>.

### ■ STUDY OF THE EXPLANT MORPHOLOGY



Control after 9 days



DRC after 9 days

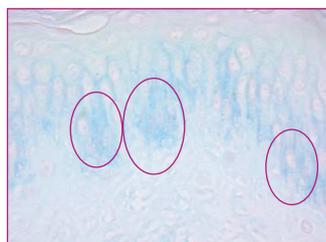
The DRC induces a strong **densification of the papillary dermis** (stronger blue coloring), and the ridges of the dermoepidermal junction are restored.

→ **Enhanced skin elasticity and firmness.**

### ■ ACIDIC GLYCOSAMINOGLYCANS (GAGS) IN THE EPIDERMIS



Control after 9 days

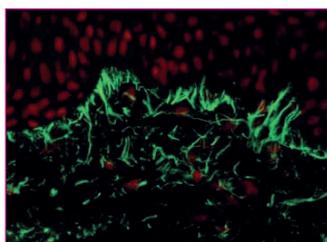


DRC after 9 days

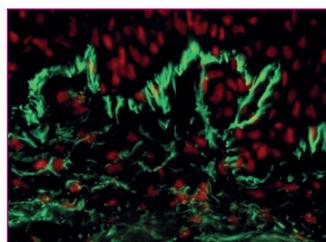
The DRC induces a strong **increase of the acidic GAGs production in the epidermis** (+ 1400%, deep blue zone), as compared to the untreated control in the same conditions.

→ **Increase of epidermis hydration.**

### ■ FIBRILLINE-1 IMMUNOLABELING



Control after 9 days



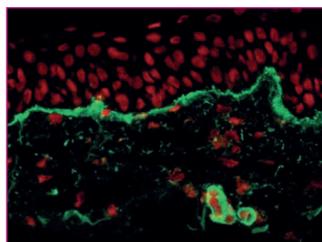
DRC after 9 days

The DRC induces a significant **increase of 26% in the fibrilline-1 expression** in oxytalan fibers (in green in the pictures), as compared to the untreated control in the same conditions.

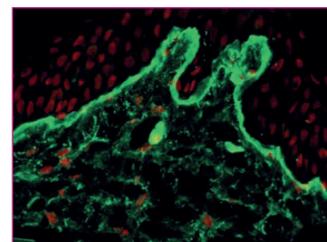
This is an especially good result since oxytalan fibers tend to disappear when the skin ages; here, we observe that their production is reactivated in the dermis.

→ **Tensor effect.**

### ■ COLLAGEN-IV IMMUNOLABELING



Control after 9 days



DRC after 9 days

The DRC induces a significant **increase of 98% in the collagen IV expression** at the dermoepidermal junction (in green), as compared to the untreated control in the same conditions.

→ **Strengthening of the dermoepidermal junction elasticity and of the dermis/epidermis cohesion.**

### ■ MDA TITRATION AFTER EXPOSITION TO THE UV RAYS

Skin explants were exposed to UV rays for inducing an oxidative stress in the dermis, which level is quantified by titrating MDA (malondialdehyde).

The DRC allows to **decrease by 28% the radical photo-induced stress** as compared to the untreated control in the same conditions.

→ **This result demonstrates the antioxidant protection provided by the dermo-restructuring complex<sup>[1]</sup>.**

## DISCUSSION

The spectacular observations on the restructuring of the dermis are the result of the actions of the DRC, whose constituents have synergetic effects on the dermis:

### ■ 3 natural antioxidants of the dermis for a synergetic action with the cellular mechanisms of defense :

**Glutathione**, the main antioxidant of the cell, a powerful cellular protector.<sup>[2]</sup>

**Alpha-lipoic acid**: universal endogenous antioxidant that protects the cell and the cell's membranes; it recycles natural antioxidants and increases their duration.<sup>[3]</sup>

**N-acetyl-L-cysteine**: antioxidant amino-acid, it is a natural source of cysteine for the production of glutathione by the cell.<sup>[4]</sup>

### ■ 8 Amino-acids constitutive of the dermis:

**Arginine**, a Natural Moisturizing Factor (NMF); takes part in the hydration regulation of the superficial layers of the skin.<sup>[5]</sup>

**Glycine**, one amino-acid of the glutathione tripeptide; it represents 1/3 of the triple-helix structure of collagen.<sup>[6]</sup>

**Leucine, isoleucine and valine** define the Branched-Chain Amino Acids group (BCAA) with known wound healing and tissues restructuring properties.<sup>[7]</sup>

**Lysine, threonine and proline**, all essential to the biosynthesis and to the stability of the triple-helix structure of collagen.<sup>[8,9]</sup>

■ **Vitamin B6**, a non-allergenic vitamin<sup>[10]</sup>, is a powerful antioxidant and a co-factor of more than 140 biochemical reactions in the cell. It is essential to the cellular metabolism of all living organisms.<sup>[11]</sup>

■ **Zinc and copper**: minerals, essential constituents of natural antioxidant enzymes, they act in synergy with the other defense mechanisms of the cell.<sup>[12]</sup>

## CONCLUSION

The Dermo-Restructuring Complex<sup>[1]</sup> induces :

- **The restructuring of the dermis and a cellular regeneration: + 98% of collagen IV and + 26% of fibrilline-1.**
- **A strong improvement of the cutaneous hydration: 15 times more acidic GAGs in the epidermis.**
- **An antioxidant protection: - 28% of the photo-induced radical stress**

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## REFERENCES & NOTES

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TEOSYAL PURESSENSE

## Redensity [I]

### LIGHT FILLING™

#### Redensification of the dermis

**Composition:**

- Non cross-linked Hyaluronic Acid at 15mg/g
- Dermo-Restructuring Complex\* (Supplemented phosphate buffer)
- Lidocaine 0,3%

**Blister pack:** 2 x 1 ml - 1 x 3 ml

**Treated areas:** Face / Neck / Neckline

**Injection site :** Reticular Dermis

**Protocol:** 3 sessions at 3 weeks intervals

**Top up session:** 2 to 3 sessions per year according to the skin's condition

- CE marking: class III
- Notified body: BSI (0086)
- For further information, please refer to the instructions for use of the product



TEOSYAL PURESSENSE

## Redensity [II] Eyes

#### Eye circles correction

**Composition:**

- Semi-cross linked Hyaluronic Acid (HA) at 15 mg/g  
Mix of cross-linked\*\* HA and non cross-linked HA
- Dermo-Restructuring Complex\* (Supplemented phosphate buffer)
- Lidocaine 0,3%

**Blister pack:** 2 x 1 ml

**Treated areas:** Eye circles, tear trough, palpebromalar groove, minimal palpebral or malar bags

**Injection site:** Deep, supra-periosteal and sub-orbicular

**Protocol:** • First session: under correction  
(recommended dose: 0,5ml/ Eye circle)

- Touch-up session: 1 month later, only if necessary

**Top up session:** 1 per year

- CE marking: class III
- Notified body: BSI (0086)
- For further information, please refer to the instructions for use of the product

\* Patent pending technology - \*\* From the patented technology RHA : Resilient Hyaluronic Acid™

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