



PLURIAL BIOSCULPTURE
BIOREMODELING OF SAGGING SKIN

YOUR MOST BEAUTIFUL AGE IS NOW!

**YOUR MOST
BEAUTIFUL
AGE IS NOW!**

MD SKIN SOLUTIONS LABORATORIES

AT A GLANCE

2ND GENERATION FAMILY BUSINESS

13

YEARS

15M

TREATMENTS

70

COUNTRIES

PLURIAL INJECTABLES

REVIVING SELF-CONFIDENCE

THE WIDEST RANGE OF INJECTABLES ON THE MARKET

08

FILLERS

04

DENSIFIERS

02

INTIMATES

04

TECHNOLOGIES

OUR SCIENCE IS EXCELLENCE

Pluryal is actively focused on promoting individual and natural standards of beauty that improve one's look whilst preserving their identity as it firmly believes that every person should feel self-confident and beautiful at any age. Pluryal is committed to innovation and dedicates a significant percentage of its yearly revenues to R&D in order to develop cutting-edge solutions that promote the "Pro-Aging" revolution and provide patients around the world with comprehensive treatments that not only improve the skin, but also the hair and body.

Keeping in line with its "Pro-Aging" philosophy, Pluryal releases an innovative concept of densifiers, a brand-new generation of injectable devices designed to treat the skin (face and body), the hair and intimate areas.



CATEGORIES OF PLURYAL® INJECTABLES

FILLERS, DENSIFIERS & INTIMATES
(ESSENTIALS/PN/BIO/LIDOCAINE)

FILLERS

Essentials:

Booster
Classic
Volume

Bio:

Bioclassic
Biovolume

Lidocaine:

Classic Lidocaine
Volume Lidocaine
Contour Lidocaine

DENSIFIERS

PN:

Silk
Densify
Hair Density

Bio:

Biosculpture

INTIMATES

Bio:

Biointimate
Biointimate Volume



PLURIAL® DENSIFIERS

A TOTAL DERMAL REGENERATION

WHY A DENSIFIERS' RANGE?

In today's skincare industry, the demand of patients is rapidly moving from "dermal fillers" toward treatments that help achieve a feeling of "well-being" and self-confidence. These treatments answer the growing desire for:

- "Well-aging" and "natural-looking" results
- Flawless and fresh skin
- Treatment of skin textural problems
- Healthy look

Moreover, a growing number of younger patients is looking for soft and bio procedures with a preventive approach.



FROM "BOOSTER" TO "DENSIFIER"

A skin "booster" is a type of dermal filler used to improve the skin's quality by boosting hydration levels deep within the skin and increasing its smoothness, elasticity and firmness.

A skin "densifier" goes even further as it not only increases the hydration levels deep within the skin but also boosts collagen production and complements the skin's natural ability to self-repair by acting on the fibroblasts and stem cells' activity. It is a skin healer as well as a scalp repairing device.

PLURIAL® DENSIFIERS: AN INNOVATION

Pluryal innovates by bringing to the industry the FIRST range of "beauty densifiers" that:

1. Durably and efficiently repairs the skin and hair.
2. Is manufactured in Europe in compliance with EU regulations and EC certification.
3. Uses innovative, patented and unique technologies based on two main actives: highly purified polynucleotides and hyaluronic acid.
4. Offers comprehensive solutions to tackle all skin and hair problems, even in the most delicate areas.

PLURIAL® BIOSCULPTURE

A DENSIFIER DESIGNED FOR THE BIOREMODELING OF SAGGING SKIN

PLURIAL® BIOSCULPTURE IS A UNIQUE BIO-REMODELER

Thanks to its unique structure, Pluryal® BIOSCULPTURE has the ability to restore the volumes of the face by lifting the skin while also bio-stimulating it.

PLURIAL® BIOSCULPTURE IS BIOCOMPATIBLE

Just like the other treatments of the BIO range developed by Pluryal, Pluryal® Biosculpture is a biocompatible, bioresorptive product derived from biotechnology.

The products of the BIO range are composed of hyaluronic acid, a glycosaminoglycan naturally found in the skin (50% of the body's hyaluronic acid is in the dermis), produced by bio-fermentation of *Streptococcus equi* subspecies *zoepidermicus* (a strain that is non-pathogenic for humans) and highly purified.

PLURIAL® BIOSCULPTURE PROTECTS HUMAN HEALTH

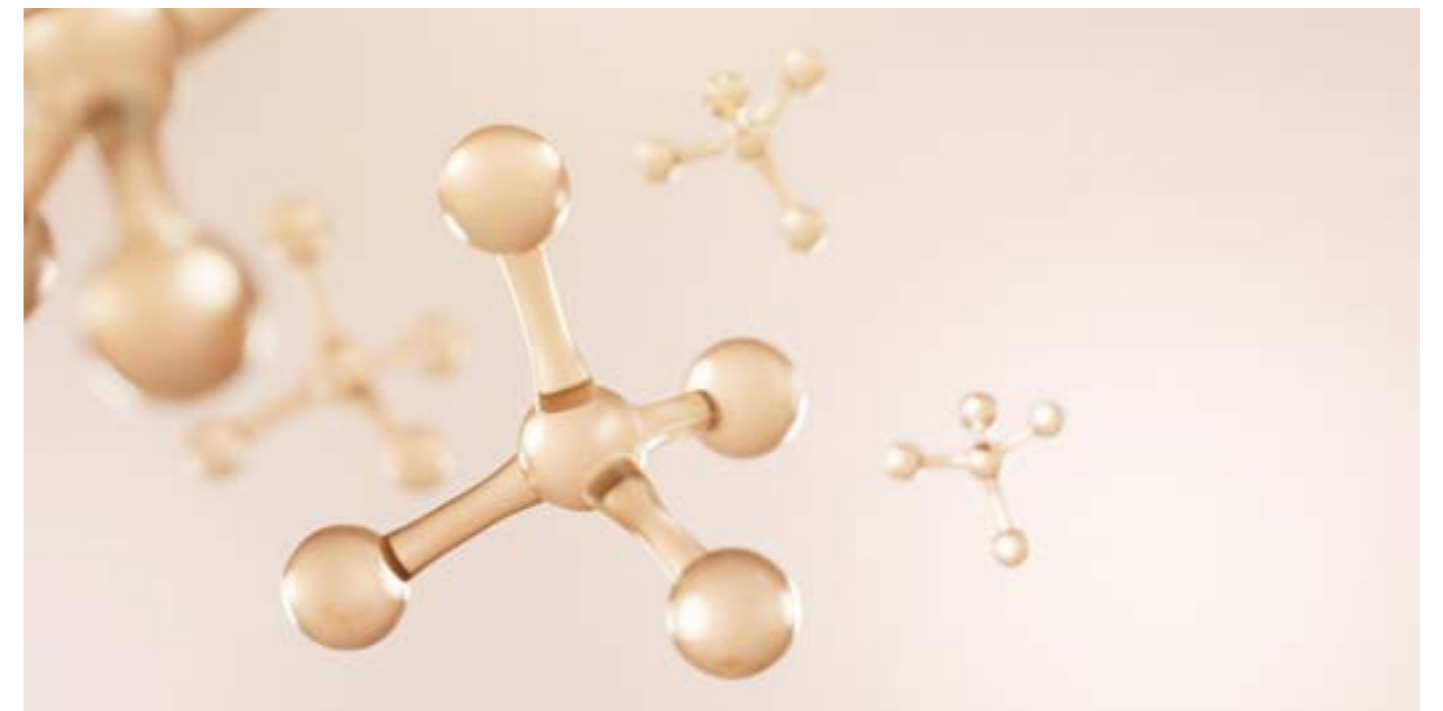
A particular attention was paid to reducing the residual content of BDDE (1,4-Butanediol Diglycidyl Ether), the cross-linking agent involved in the "active matrix" technology used to develop the whole range: MATRICYAL 3D TECHNOLOGY®.

During the manufacturing process:

- Residual BDDE is removed from the product with a dialysis process, ensuring traces of it do not exceed 0.1 ppm, a level which is 20 times lower than the authorized FDA limit of 2 ppm.
- Almost no nucleic acids or proteins (traces: <0.1%) can be found in the finished product guaranteeing the best quality and absolute safety.

PLURIAL® BIOSCULPTURE PROTECTS THE ENVIRONMENT

Both the manufacturing process (ISO 13485) and industrialization bioprocess (ISO 14001) comply with the strictest environmental standards. In addition, the packaging of the product is entirely recyclable and environmentally friendly.



MATRICYAL 3D TECHNOLOGY®

A BIO INNOVATION

The MATRICYAL 3D TECHNOLOGY® consists in using a highly purified hyaluronic acid, combining three different types of molecular weight HA in a layered process:

- Cross-linked HA, concentrated at 25mg/ml with a blend of two types of HA with different molecular weights
- And a layer of free hyaluronic acid to protect the HA from enzymatic degradation.

This innovative technology uses a 3D matrix which allows having **the lowest possible level of residual BDDE (< 0.1ppm)** thanks to a long reticulation time at low temperature.

CONTROLLED-RELEASE 3D MATRIX

FIG. 1: GENTLE CROSS-LINKING OF TWO HYALURONIC ACID WITH TWO DIFFERENT MOLECULAR WEIGHTS

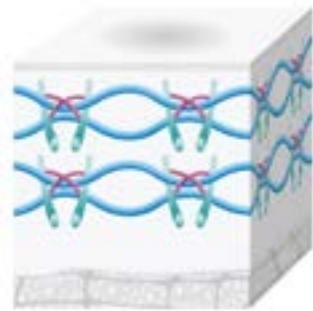
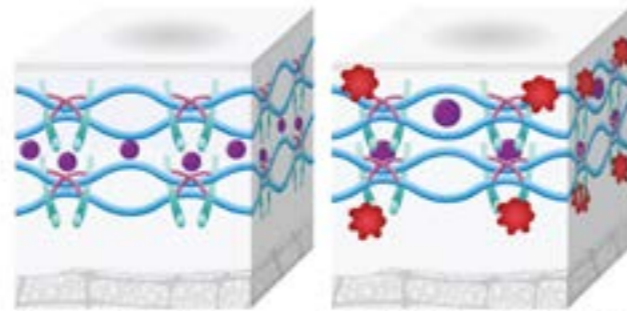


FIG. 2: LAYERING OF THE NATIVE HYALURONIC ACID



A cross-linked HA layer alternated with one free HA layer

The layered free HA is protected against enzymatic degradation and is released slowly

2 million Dalton HA 1 million Dalton HA BDDE Free HA Enzyme

STEP 1: SOLID 3D MATRIX CREATION (FIG. 1)

Long crosslinking time at low temperature to get a non-calibrated, single-phase gel with optimum viscosity. 2 types of hyaluronic acid of different molecular weights (2 million Da and 1 million Da) are crosslinked with BDDE to form a solid 3D Matrix.

ADVANTAGES:

- The low mixing speed allows the crosslinking agent to disperse more evenly, which reduces the BDDE concentration to 1/3 of that of most products with a similar gel viscosity on the market.
- The low temperature limits the depolymerization of the sodium hyaluronate used as a raw material to preserve its rheological properties.
- In addition, a long crosslinking time helps better control the degree of crosslinking and reduces the quantity of crosslinking agent used.

STEP 2: LAYERING OF FREE HA LAYERS INTO THE 3D MATRIX (FIG. 2)

Free hyaluronan molecules (500,000 Da) are inserted at the core of crosslinked hyaluronic acid layers to complete the 3D Matrix, one crosslinked layer alternated with a free hyaluronan layer.

ADVANTAGES:

- Because the free HA is layered in the network, it is protected from hyaluronidase enzymatic degradation.
- This free HA is gradually released over time providing a bio-stimulating effect.

MATRICYAL 3D TECHNOLOGY®

A BIO INNOVATION

SKIN BENEFITS [1,2,3,4]

The MATRICYAL 3D Technology® allows the elaboration of a very unique hyaluronic acid product where the HA particles are much smaller than those used in standard products. This promotes the penetration and distribution of Pluryal® BIOSCULPTURE in the tissues, preventing the occurrence of any “string effect” and promoting more natural-looking results.

INTENSE HYDRATION

High and Medium Molecular Weights HA: 2 Million and 1 Million Da

High Molecular Weight HA offers skin **hydration and protection properties by capturing water molecules and free radicals as well as contributing to metabolic exchanges.**

REJUVENATION/REGENERATION

Low Molecular Weight HA: 500 kDa

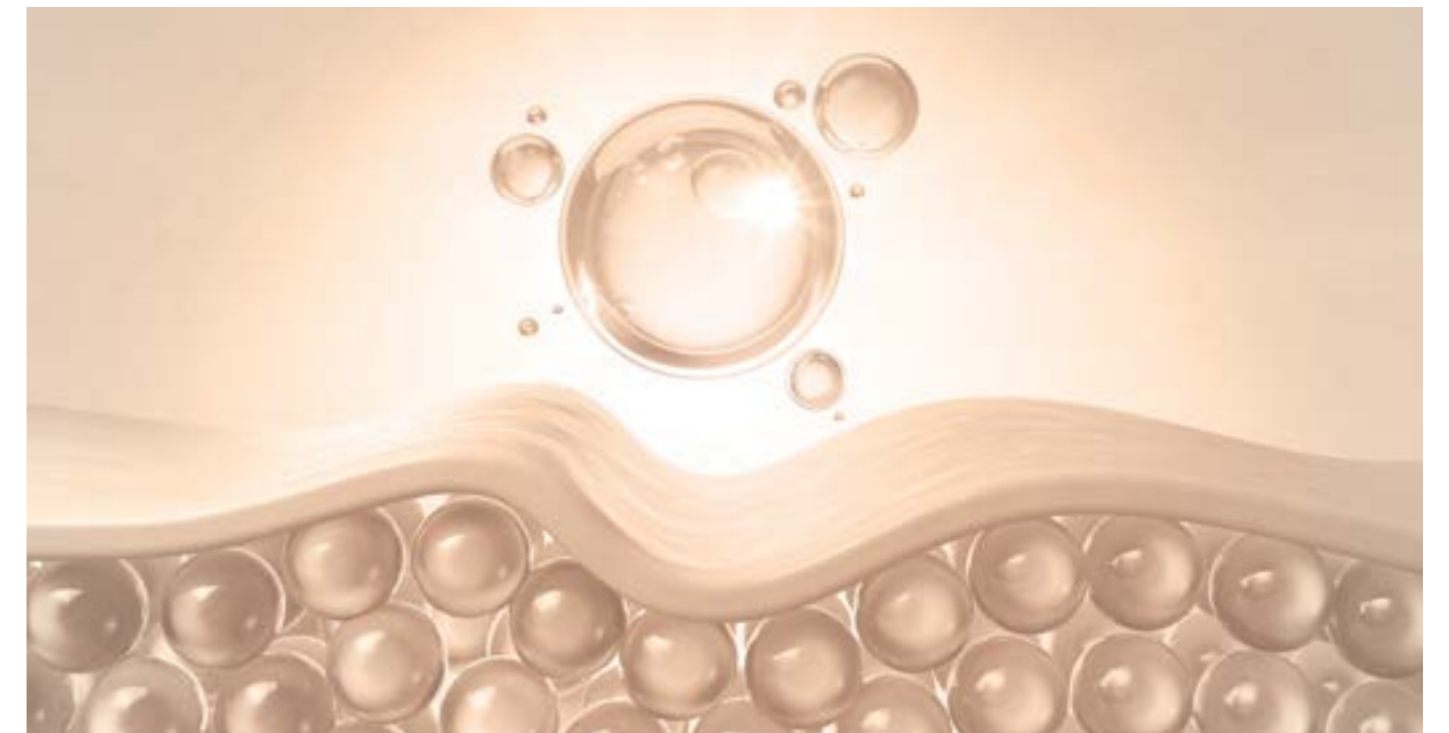
Free Low Molecular Weight HA is released, inducing a bio-revitalizing effect.

Binding with CD44 cell receptors, HA molecules stimulate endothelial cells, **promoting neo-angiogenesis and collagen synthesis.**^[5]

RESTRUCTURATION

The product's formulation uses higher molecular weight and crosslinked HA.

- High Molecular Weight HA features a relatively slow biodegradation rate. It gradually biodegrades and reacts with CD44 receptors, **inducing the release of IL-4, IL-10, which act on the proliferation of fibroblasts and basal epidermal cells** reducing aseptic inflammation reaction activity and affecting IL-1b and PG-E. As a result, inflammation and free radical activity are decreased ^[6,7]
- **Cross-linked hyaluronic acid with BDDE features a slower degradation than free HA and a longer aesthetic effect.**



BIOREMODELING OF SAGGING SKIN

RESTRUCTURED SKIN, RESPONSIBLE BEAUTY

1. Visible results as of the first session
2. Perfect for light volume increase
3. Spreads perfectly well in tissues
4. Adapts to the face's natural shapes
5. Green product



PLURYAL® BIOSCULPTURE

TREATMENT OF SKIN LAXITY

PLURYAL® BIOSCULPTURE is an injectable medical device based on the MATRICYAL 3D TECHNOLOGY®. It is an apyrogenic, physiological, restorable and sterile gel implant which acts as a “densifier”, improving the quality of the skin of the face and targeting small losses of volume and sagging skin.

Composition: 25 mg/ml of hyaluronic acid, including 10% free hyaluronic acid embedded in the 3D matrix

Active Matrix	Free HA
2 Million Da (60%)	500 kDa (10%)
1 Million Da (30%)	

Sterilization: Steam

Main Action:

- Rejuvenates: tightens sagging skin.
- Moisturizes: restores the natural osmolarity of soft tissues.
- Restructures: stimulates dermal and hypodermal tissue receptors.
- Restores hypovolumes: fills and recreates lost volumes on the face and hands.

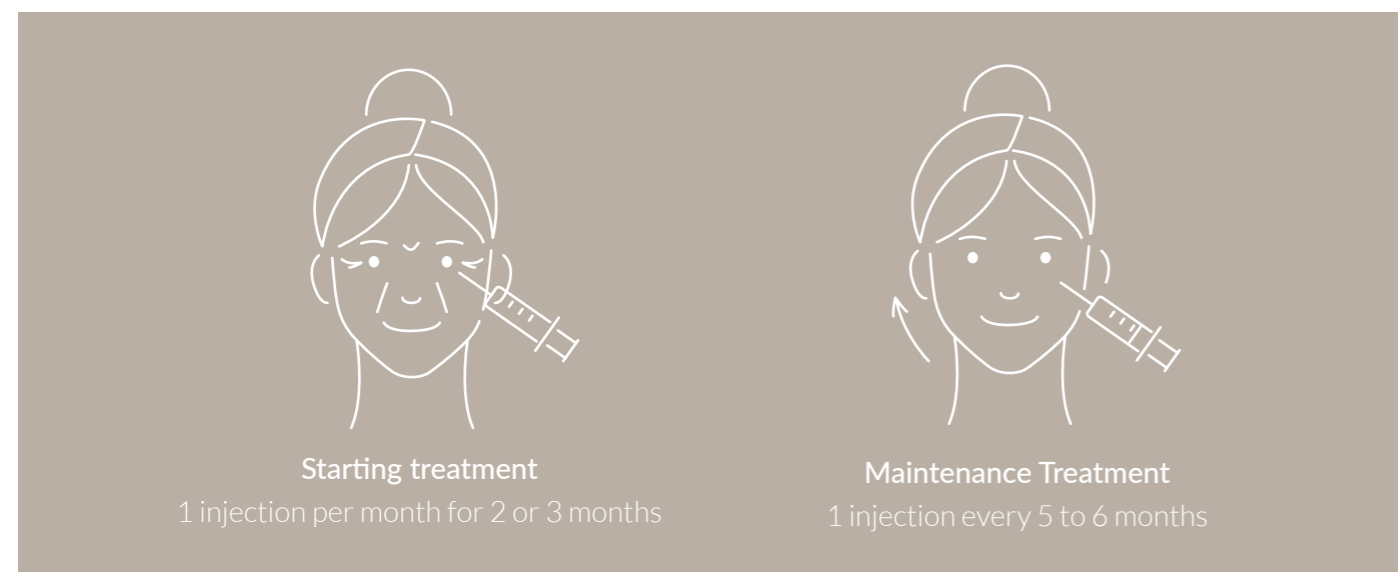
Target Age Group: Starting the age of 35

Level of Injection: Deep dermis / Superficial Hypodermis

Pack Contents: 2 x 1,1 ml pre-filled syringes | 2 x 27 G needles | 2 x 30 G needles

Regulatory: Syringe (CE 0373, MD Skin Solutions) | Needles (CE 0123, Sterimedix LTD)

TREATMENT FREQUENCY

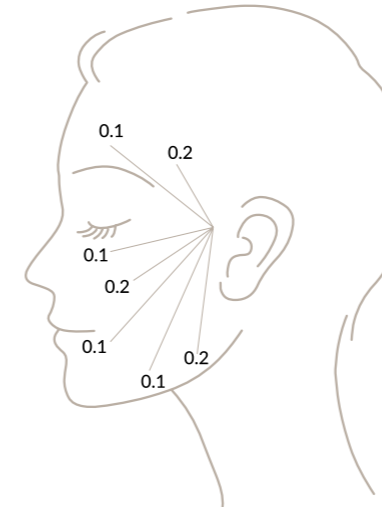


The diagram illustrates two scenarios for treatment frequency. On the left, a woman's face is shown with a syringe injecting into the cheek. Below this is the text: "Starting treatment 1 injection per month for 2 or 3 months". On the right, a woman's face is shown with a syringe injecting into the cheek. Below this is the text: "Maintenance Treatment 1 injection every 5 to 6 months".

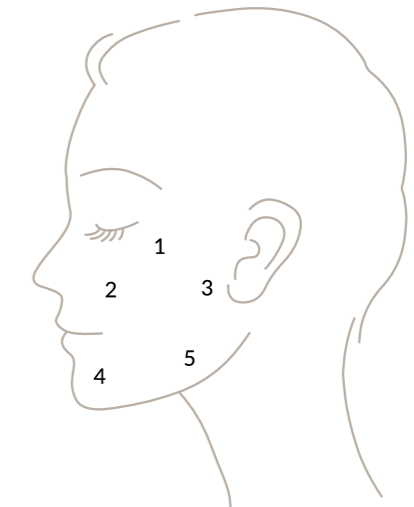
PLURYAL® BIOSCULPTURE

TREATMENT OF SKIN LAXITY

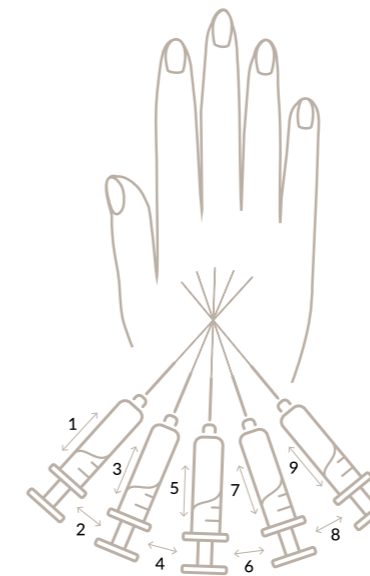
INJECTION TECHNIQUES



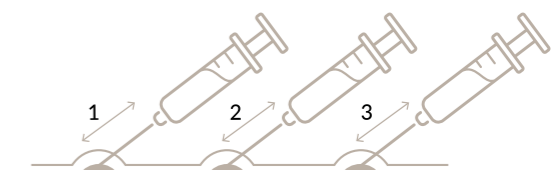
1 Double7Lift Technique®: use a cannula 18-22G /70-90mm along the skin injecting the product from a single-entry point, in a fan pattern.



2 5-Points Technique: inject in the 5 anatomical points around the malar bone area; use in case of skin laxity.



3 Fan pattern: It is similar to the linear retrograde technique. The injection is done at the same angle, but the direction of the needle is modified radially, in several axes, without removing it. This technique is used for large flaws and volumes.



4 Microdroplet technique (Subdermal papules): not more than 0.02 cc per injection with approximately 0.5 cm intervals between injections

PLURYAL® BIOSCULPTURE

TREATMENT OF SKIN LAXITY

WHO IS A CANDIDATE FOR PLURYAL® BIOSCULPTURE?

Pluryal® BIOSCULPTURE is designed to treat regular skin areas which need to be rejuvenated. Everyone can benefit from this treatment, but mainly patients who are:



1 Complaining about a tired face appearance



4 Concerned about the environment and using green products



2 Looking for a non-surgical treatment for sagging and flaccidity



5 Looking for flawless skin



3 Asking for a treatment that restores the skin's quality and hydration



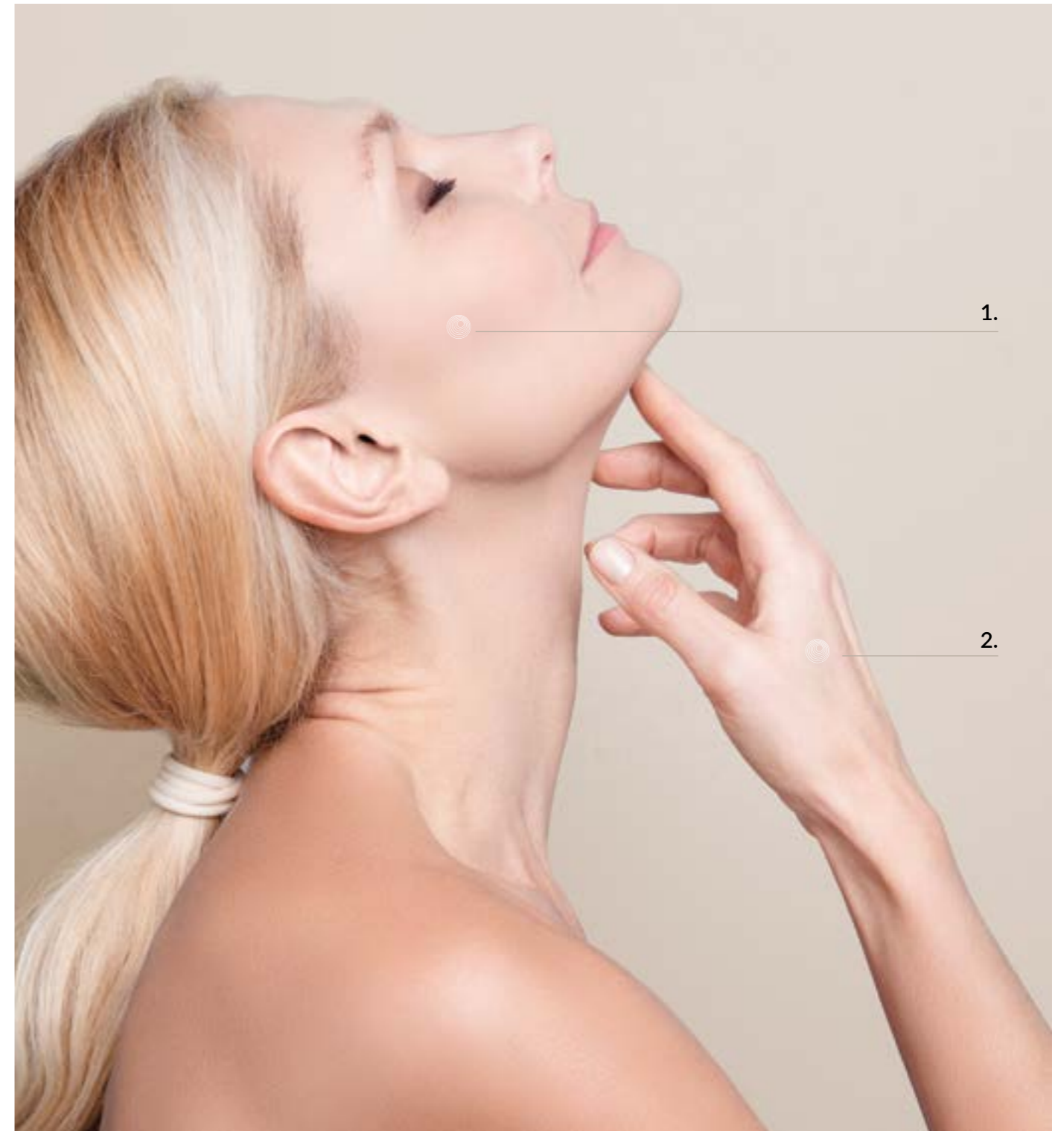
6 Looking for natural results

PLURYAL® BIOSCULPTURE

TREATMENT OF SKIN LAXITY

TARGET AREAS

1. Face
2. Back of the Hands



CLINICAL PROVEN EFFICACY

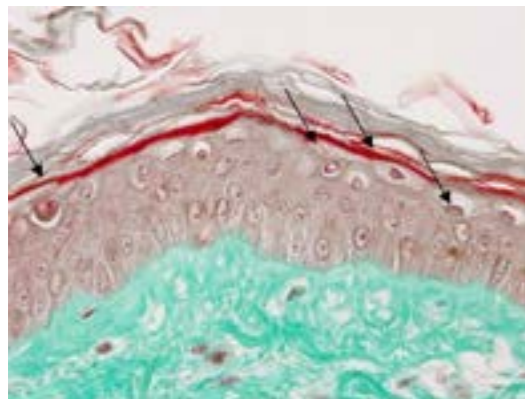
EX-VIVO STUDIES¹⁸¹ (SKIN EXPLANTS)

During ex-vivo studies conducted in France by an independent laboratory and comparing skin explants injected with Pluryal® BIOSCULPTURE to treatment-free skin explants, it has been observed that Pluryal® BIOSCULPTURE increases:

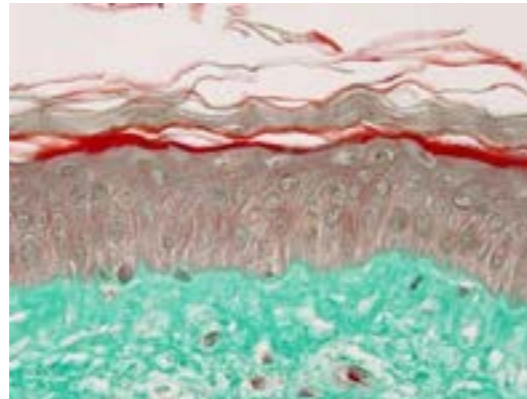
- The skin's viability
- The level of hyaluronic acid in the upper papillary and reticular dermis
- The level of collagen by boosting the increase of fibronectin which stimulates the fibroblasts.

Cell viability control (Examination of the general cell and tissue morphology by Masson trichrome staining)

Control (Day 9)



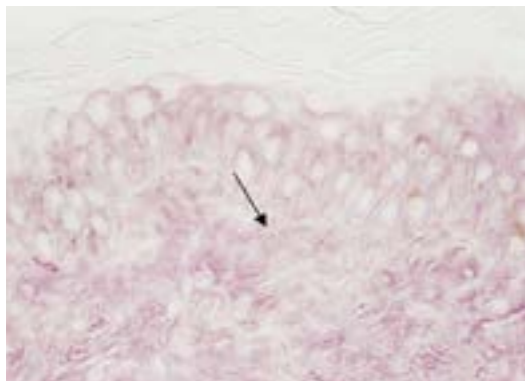
Pluryal® BIOSCULPTURE (at Day 9)



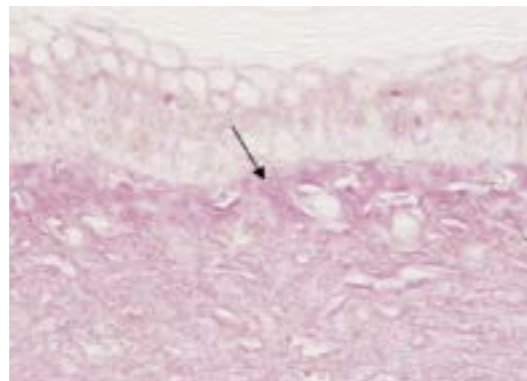
→ Pluryal® BIOSCULPTURE improves epidermal viability without altering dermal viability. It protects and strengthens the epidermis, and provides it with a higher resistance capacity to offset the slight alterations due to the test.

Activity related to hyaluronic acid (evaluation of the expression of hyaluronic acid in the papillary dermis after HABP labelling)

Control (Day 9)



Pluryal® BIOSCULPTURE (at Day 9)

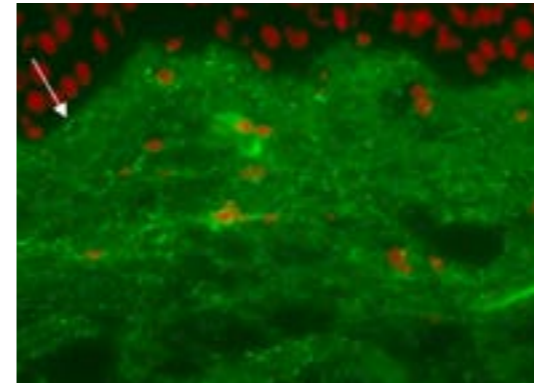


→ Pluryal® BIOSCULPTURE increases the quantity of hyaluronic acid in the upper papillary and reticular dermis.

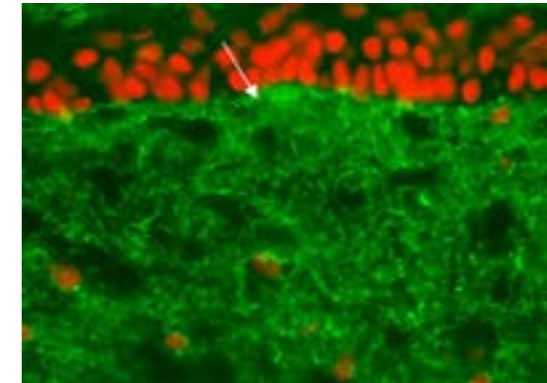
CLINICAL PROVEN EFFICACY

Activity related to fibronectin (evaluation of the expression of fibronectin in the dermis after fluorescence immunolabelling)

Control (Day 9)



Pluryal® BIOSCULPTURE (at Day 9)



→ Pluryal® BIOSCULPTURE greatly increase the fibronectin in the upper papillary and reticular dermis.

Fibronectin is a structural protein found in the extracellular matrix. It is one of the ligands contained in integrins. Fibronectin plays various biological roles in the skin^[9]: it represents a growth factor^[10], an adhesion molecule, as well as a chemotactic agent for fibroblasts^[11] and it contributes to collagen fibril deposition and assembly. In addition, it controls the migration of keratinocytes in the skin's healing process.^[12]

Fibronectin stimulates fibroblasts and is involved in the collagen network restructuring in the extracellular matrix. Immunolabelling of fibronectin shows that the greener fluorescence there is, the more fibronectin there is.

NB: in red, nuclei counterstain to spot cells.

TIGHTEN SKIN FROM WITHIN WITH PLURYAL® BIOSCULPTURE

CLINICAL PROVEN EFFICACY

IN-VIVO STUDY (CLINICAL CASES)

CASE 1

Before

After



Treatment: Skin laxity and dehydration
After 1 treatment session with Pluryal® BIOSCULPTURE
Immediate effect: Flaccidity is significantly improved and skin is more hydrated
Courtesy of Dr. Karolina UNGERT (Cosmetology, Poland)

CASE 2

Before

After



Treatment: Skin Laxity and small loss of volume
After 1 treatment session with Pluryal® BIOSCULPTURE
Immediate effect: Flaccidity is improved and natural volume increased
Courtesy of Euro Origin (Shanghai, China)

CLINICAL PROVEN EFFICACY

CASE 3

Before

After

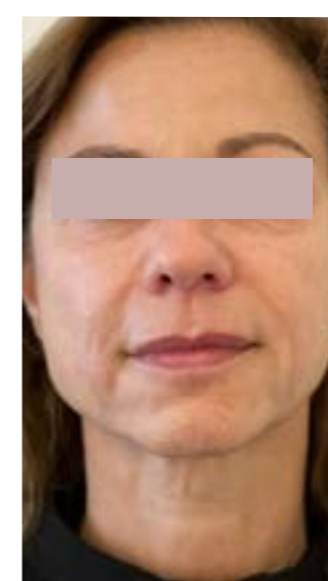
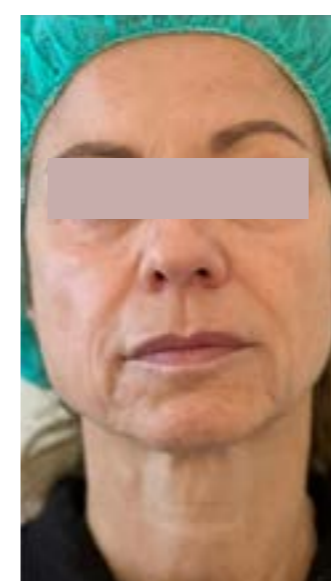


Treatment: Skin laxity and small loss of volume
After 1 treatment session with Pluryal® BIOSCULPTURE
Immediate effect: Flaccidity is improved and natural volume increased
Courtesy of Euro Origin (Shanghai, China)

CASE 4

Before

After



Treatment: Skin laxity and quality
After 1 treatment session with Pluryal® BIOSCULPTURE mixed with Pluryal® SILK
Immediate effect: Flaccidity is improved, wrinkles are attenuated and skin quality is improved
Courtesy of Dr. Hale KAPKIN (Aesthetic Doctor, Germany)



Pluryal® BIOSCULPTURE is a class III medical device which must only be used by doctors who have received specific training on the intradermal injection techniques. Read the instructions before use. Inform the patients about possible side effects.

Sources:

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