Natural and mobile interactions

Long chains of HA

DYNAMIC RHEOLOGY
FOR HYALURONIC ACID
FILLERS

Embrace performance

Increasing HA stability and concentration into the dermis, and preserving its optimal length may contribute to enhance the skin quality, its regeneration capacity and hydration to counteract ageing process.

4. Thanks to these properties, hyaluronic acid maintains tissue architecture, volume and hydration.

TEOSYAL® RHA
WELCOME TO THE ERA OF
DYNAMIC AESTHETICS

Structural role of the long chains of HA

In a healthy skin, native HA is made of long chains (High Molecular Weight (HMW) HA > 1000 kDa) vs long chains (Low Molecular Weight (LMW) HA < 500 kDa) vs long chains (Low Molecular Weight (LMW) HA < 500 kDa) containing a higher proportion of short chains (Low Molecular Weight (LMW) HA < 500 kDa) containing a higher proportion of short chains (Low Molecular Weight (LMW) HA < 500 kDa).

Thanks to these properties, hyaluronic acid maintains tissue architecture, volume and hydration.

TEOXANE Geneva
Les Charmilles. Rue de Lyon, 105
CH 1203 Genève
teoxtane.com

TEOXANE UK LTD
54-55 Shrivenham Hundred Business Park, Majors Road
Watchfield, Swindon Wiltshire SN6 8TY United Kingdom
www.teoxane.co.uk

4. Thanks to these properties, hyaluronic acid maintains tissue architecture, volume and hydration.

Opposite functions of the short chains of HA

Structural role of the long chains of HA

Exacerbating inflammatory process

Loss of viscoelastic properties

Loss of space filler and shock absorber roles

With age, the quality of HA in the dermis changes: especially the HA polymers are shortened leading to a higher proportion of short chains (Low Molecular Weight (LMW) HA < 500 kDa) vs long chains. Irreversible degradation of the polymer during its crosslinking process may have deleterious effects and limit usefulness of the product.


What do your patients need?

Concerns of the patients before hyaluronic acid injection:

- Natural results and safety are among the top 3 concerns of the patients
- Selecting a dermal filler with the right rheological properties is key to achieve the natural, long lasting desired aesthetic result

Ideal features of a dermal filler

- Resilience properties: Inclined to adapt to facial movements in a similar manner to native tissue
- Easy to inject
- Naturally incorporated into the patient’s dermis
- Long lasting yet reversible results

From native HA to dermal filler

Classical crosslinking method

Crosslinking method requires harsh conditions, resulting in a higher rate of short chains and thus a higher BDDE rate (5.0 - 10.0%). To obtain a monodisperse cohesive gel.

Damages natural viscoelastic properties: Rigid structure

TEOXANE Laboratories properties: Rigid structure

Optimization of the crosslinking parameters

"Preserved Network" method

By associating the Strength and Stretch concepts, the dynamic G’ of Strength characterizes the robustness of a gel, i.e. its ability to keep its mechanical properties on a full range of stress.

The conventional rheology measures do not provide information about the gel behaviour under such large deformations.

Obtained by integrating the G’ curve, the dynamic G’ of Strength characterizes the robustness of a gel, i.e. its ability to keep its mechanical properties on a full range of stress.

The most commonly used rheological parameters to characterize a HA gel are elastic modulus G’ and viscous modulus G”.

To complete this dynamic approach and considering that the real deformations a filler is submitted to are actually beyond the linear viscoelastic region, the next step was to assess the gel behaviour in the non-linear viscoelastic region.

THE DYNAMIC RHEOLOGY CONCEPT

To complete the dynamic approach, considering that the real deformations a filler is submitted to are actually beyond the linear viscoelastic region, the next step was to assess the gel behaviour in the non-linear viscoelastic region.