

DermaI Fillers (Face)

JUVÉDERM® Ultra (a hyaluronic acid) is a natural product that hydrates and plumps the skin to improve the appearance of wrinkles and expression lines. JUVÉDERM® restores the hyaluronic acid that has been diminished over time, enhancing your existing features and provides you with a natural radiance.

Lips

AA much more advanced treatment to enhance lips using JUVÉDERM® Smile injections with added anaesthetic, to make it a relatively pain free procedure. Refines lip lines and adds fullness to enhance your smile.

JUVÉDERM® is a smooth consistency gel formulation hyaluronic acid dermal filler. JUVÉDERM® is developed using the proprietary HYLACROSS™ technology, an advanced manufacturing process that results in a malleable, smooth gel that flows easily and consistently into the skin and provides a predictable result.



MEDICAL COSMETIC USES OF HYALURONIC ACID

The History of Hyaluronic Acid

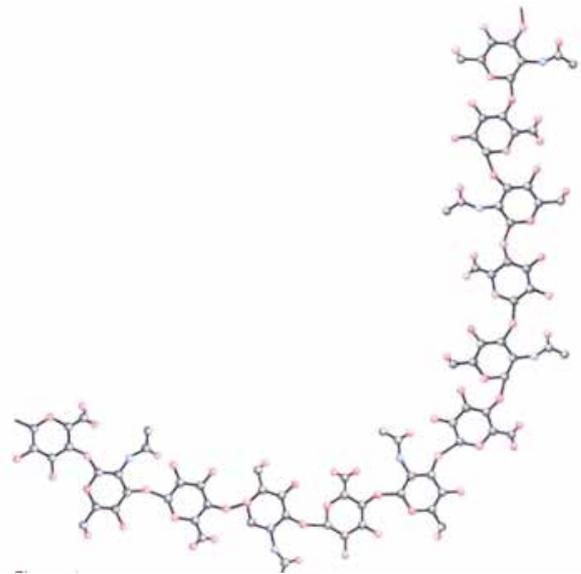
Hyaluronic acid (HA) is a versatile macro-molecule which exists naturally in living organisms. It is identical between species and tissues, which makes it bio-compatible and ideal for medical use. A polysaccharide composed of repeating disaccharide units, comprising D-glucuronic acid and N-acetyl glucosamine (see Figure 1) it was first isolated in 1934 from the vitreous of bovine eyes.

Approximately 56 % of the body's HA is found in the skin. The dermis comprises a matrix of collagen and elastin fibers, suspended in a HA-rich extracellular matrix. The environment created by HA offers resistance to compression and protects the structures underlying the skin from physical damage. HA also performs a lubricating function and enables the skin to accommodate changes in shape and volume that occur when bones and joints move.

The distribution of endogenous HA in the skin and throughout the body changes over time. Less accessible HA and thereby a diminished capacity for water-binding of the HA molecule leads to loss of volume of the skin, wrinkle formation and the characteristic signs of ageing.

HA has been used in many pharmaceutical products including treatment of joint pain, fertility and medical aesthetic applications. HA was shown to be associated with a number of important diseases, namely rheumatoid arthritis, degenerative arthritis, cancer and skin diseases. By the 1970's a number of reports started to show its therapeutic value, such as Healon use in eye surgery, use in osteoarthritis products and subsequently in viscosurgery and visco-supplementation, matrix engineering and delivery compartments. In recent years, biotechnology has been used to develop HA

derivatives with tailor-made molecular sizes, which further increase the potential applications of this remarkable molecule.



Properties of Hyaluronic Acid

Hyaluronic acid has important properties, which make it ideal for use as a dermal-filler. These are:

- Ubiquitous - hyaluronic acid is the same molecule throughout all species.
- Biocompatible, non immunogenic.
- 100% non-animal origin; non-allergenic; no allergy test required prior to injection.
- Biodegradable product: progressively absorbed by the skin and turned into water and CO₂.
- Hyaluronic acid is extremely hydrophilic - can absorb up to 1000 times its weight in water.
- Viscous-elastic: maintains the skin elasticity.
- The introduction of hyaluronic acid dermal filler into the skin temporarily increases collagen production in the skin, adding to skin-firming effect.



Isolation of Hyaluronic Acid

Dermal-fillers are engineered with biotechnologically obtained Hyaluronic Acid. HA is obtained by bacterial fermentation (streptococcus strain), which lowers the risk of contamination from animal sources and is therefore non-pathogenic for humans. The bacteria are selected due to its unique ability to synthesise high quality HA in commercially useful amounts

- The stages of HA productions are:
- Inoculation of few cells into non-animal growth medium.
- Incubation.
- Once required number of bacteria obtained, cells transferred to fermentation equipment and fermentation started {non-animal medium designed to give high output of HA}
- Once fermentation completed, cells are killed and filtered off.
- HA precipitated out of fluid by addition of ethanol
- Precipitate dissolved and filtered.
- Fluid precipitated again with ethanol.
- Precipitate {hyaluronic acid fibre} dried and analysed.

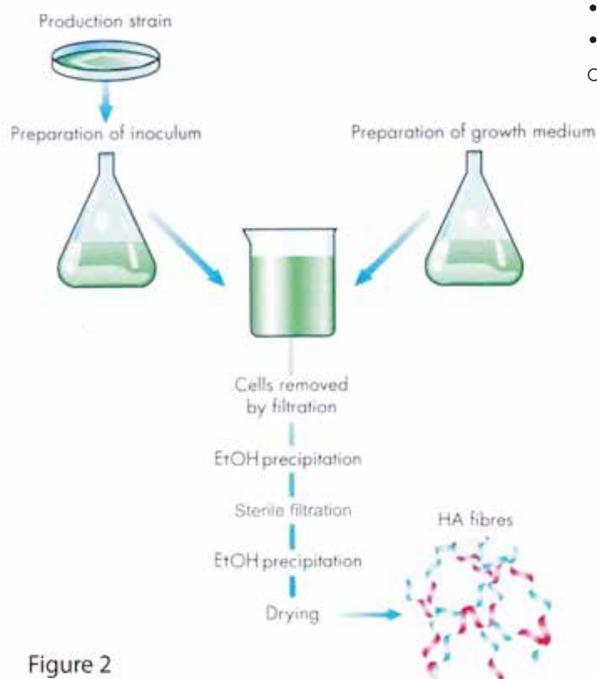


Figure 2

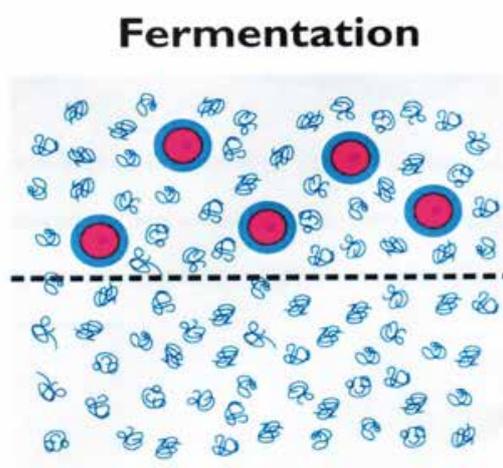


Figure 3

Stabilisation of Hyaluronic Acid

The half-life of HA is <24 hours in the skin. Therefore, stabilisation of the HA molecule is essential to achieve long-lasting dermal-filler product.

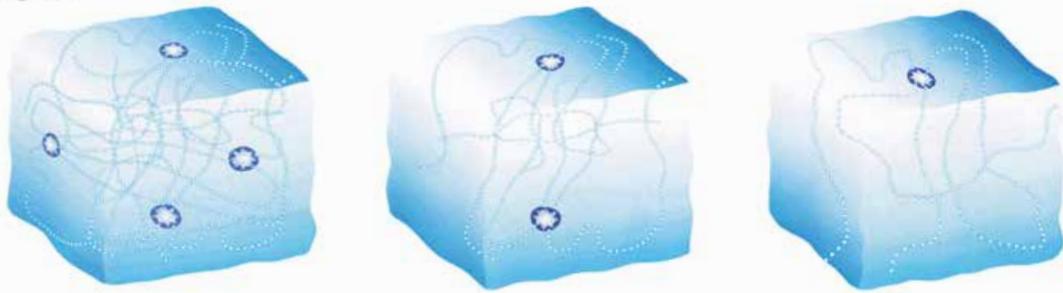
Dermal-filler products such as Teosyal, Restylane and Juvederm Ultra contain stabilised HA. This stabilisation is achieved by cross-linking the HA with the organic compound 1,4-Butandiol Diglycidyl Ether (BDDE). All of the above

Fillers have low levels of cross-linking with BDD. This ensures excellent biocompatibility

with low risk for inflammatory reactions and prolonged duration of effect. Stabilisation of HA slows down the de-naturing process and enables the product to last for up to 12 months in the body.

Degradation of HA dermal-filler products occur when HA chains are slowly released from the gel and biodegraded by the same mechanisms as those that degrade the body's own HA. This occurs very slowly as molecules of HA are replaced with water molecules which are attracted to the remaining hydrophilic HA molecules. This preserves implant volume over time (see Figure 4).

Figure 4



- ◆ Documented duration in the tissue of up to 18 months (See clinical support references)
- ◆ Continuous correction over time = long lasting aesthetic benefit
- ◆ Patient satisfaction leads to repeat business

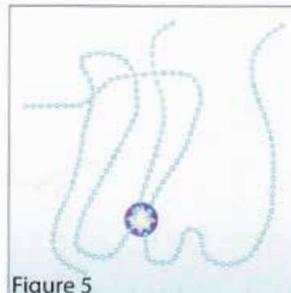
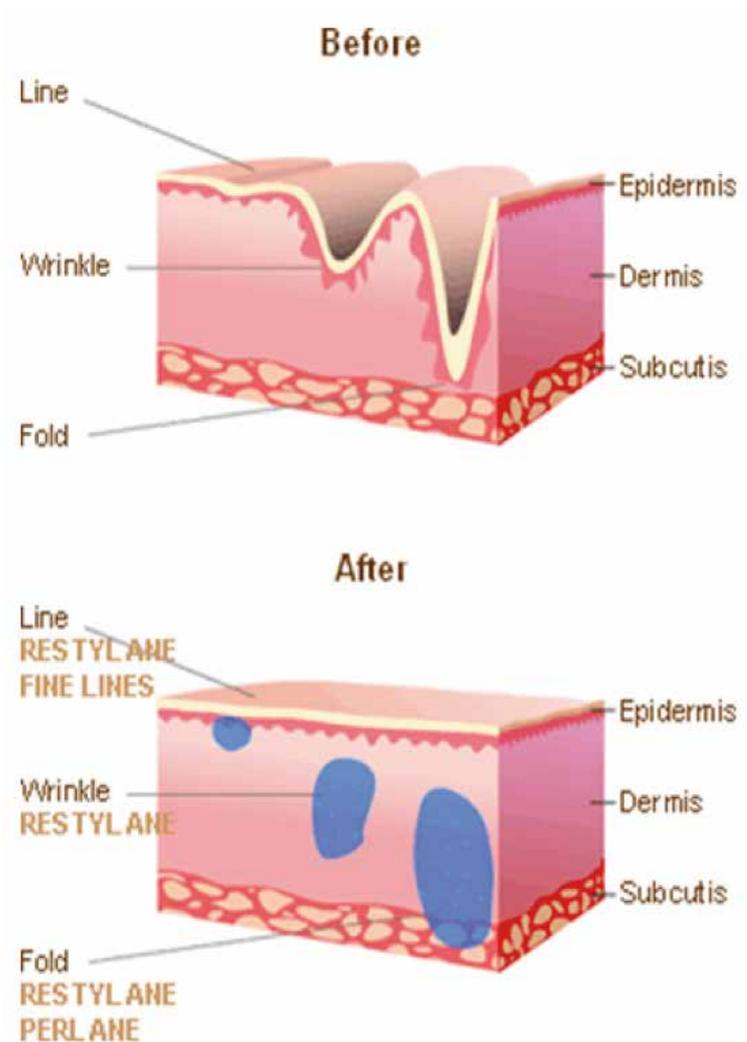
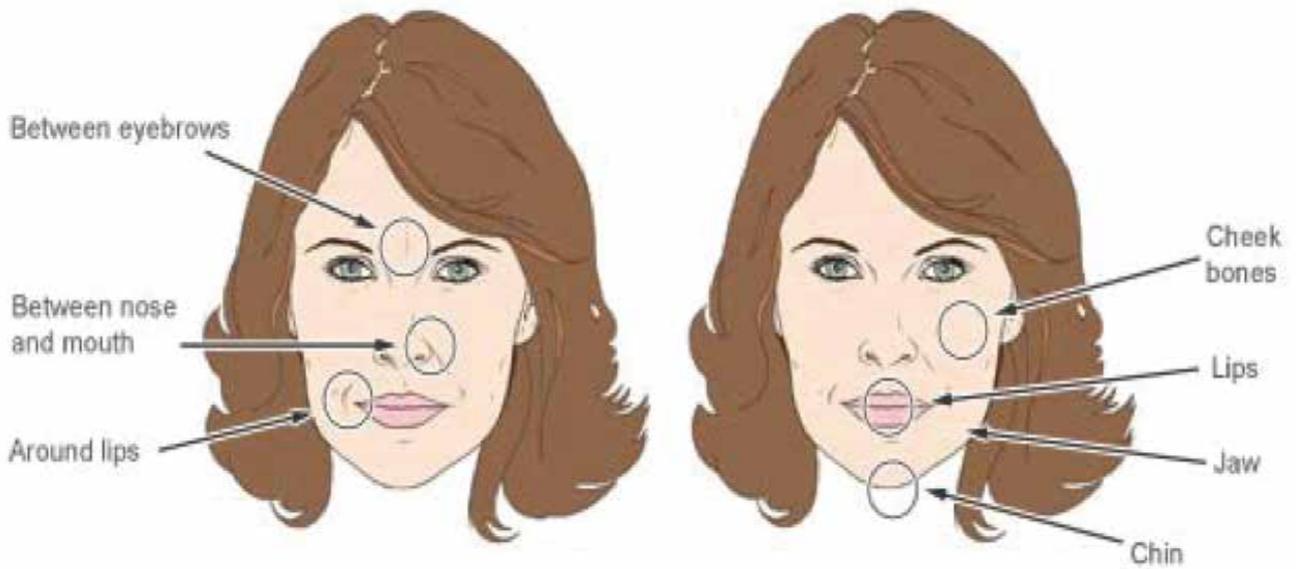


Figure 5

There are different depths to the lines; this diagram shows a practitioner which type of filler to use in which area.





Where fillers are used



Facial changes due to ageing

As we age the contours of our face change as facial volume, hydration and elasticity of skin decreases and laxity of skin increases. Lines and wrinkles appear, as this volume is lost. The key signs of ageing are:

- 35 - 45 yrs soft tissue volume loss
- Loss of fat - new research shows distinct pattern of fat loss
- Loss of collagen and elastin
- Loss of hyaluronic acid
- 45 and above cranial facial remodeling due to bone resumption

The Figure 7 shows the effect of volume, increased laxity of skin and the effect of gravity on the face'

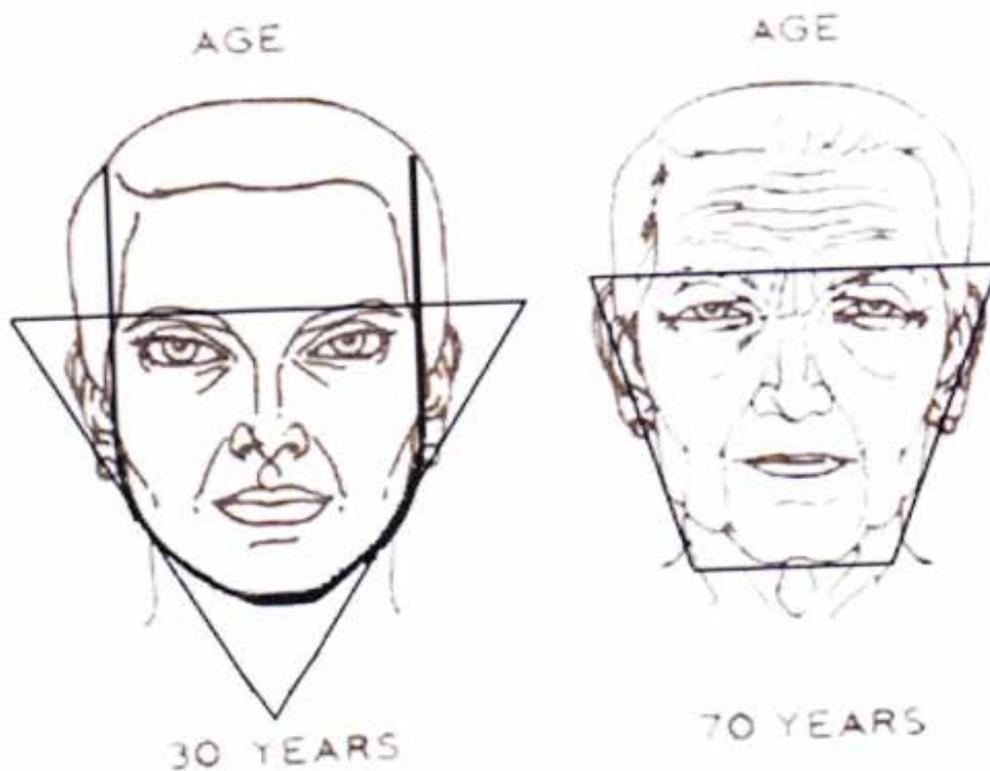


Figure 7

possible treatment options



For further information on Dermal filler see: <http://www.juvedermusa.com>