HYALURONIC ACID – DEFINITIONS

Worth Reading

OLWEN'S NOTE:

Those of you that have known me for many years also know that I was instrumental in launching the very 1st Hyaluronic Acid based Skin Care product in Canada, USA, Sweden & Denmark called; ***'Visible Youth'™.*** *Prior, due to my extensive experience in health and beauty, I understood the function of HA and its importance in the use of Skin Care, and as very few knew about it in the realms of the skin care industry at that time, hence I was appointed the Marketing Director with, Biopolymers/ Sterivet Laboratories / Hyal Pharmaceutical Corp., and I set out to train the Spa professionals in the importance of its use.*
Visible Youth™ *was the successful forerunner HA Anti-aging product which influenced to what has now become the 'Holy Grail' of Skin Care moisturization, and anti-aging, of which we now know far more about.*
I'm proud to be part of that legacy, and to continue to offer this most precious substance in many of the products that I now represent through my own company; VITAL Beauty Products Inc. Est. 1993, and to continue working with dedicated professionals in health and beauty care, from coast to coast.

THE FOLLOWING EXCERPTS ARE SOME OF THE BEST (Plain English) EXPLANATIONS THAT I HAVE READ TO DATE:

To review the full articles, go to the links provided. This information reinforces much of the information I have given to you in the past and more, especially about the importance of drinking water when using a product that contains Hyaluronic Acid (HA)

Happy reading!

While choosing your **Hyaluronic acid Serum** always consider this: the smaller is the HA molecule, the deeper it goes into the skin, the bigger is the HA molecule the more visible are the results, as you are working more on the surface of the skin.

The **low molecular weight hyaluronic acid** penetrates deep into the skin arriving at the hypodermis where it exerts a powerful moisturizing action and contributes to the elastin production. It works as a humectant and stimulating agent for collagen synthesis and cell proliferation. The low hyaluronic acid increases skin moisturizing starting from its deepest layers, thus changing the skin's visible complexion: your face becomes immediately brighter.

The **medium molecular weight hyaluronic acid** can bind to more water than the low molecular weight hyaluronic acid but it cannot
enter so deep into the skin due to its bigger size. The fact of being absorbed more on the surface of the skin makes the medium HA able to produce interesting aesthetic effects, reducing wrinkle even more than the low HA.

The **high molecular weight hyaluronic acid** has the ability to bind huge amount of water thanks to its structure. Its high molecular weight doesn't allow deep penetration into the skin layers. This HA produces a more superficial action on the skin compared to the medium and the low molecular weight HA. Working more on the surface of the skin means that this kind of hyaluronic acid ensure
the most visible effects on wrinkles, that look like they're filled from inside due to the powerful skin

surface moisturizing.

Anyhow, **the best performance you can obtain is by the synergy of the use of different molecular weight hyaluronic acids**. The different weight HA serums work on different skin layers, ensuring the best action on the whole skin, reducing wrinkles and lightening the complexion.

The amount of HA in cells, depends on the molecular weight and size, and are linked to numerous complex functions:

- reduces nerve impulses and nerve sensitivity associated with pain.
- has an anti-inflammatory effect.
- facilitates biochemical processes in many tissues and organs of the body, such as the brain, heart, liver, skin, synovial fluid in joints, cartilage, eyes and developing embryos.
- attaches to collagen and elastin to form cartilage.
- lubricates movable joints and muscles.
- increases supply of joint-lubricating synovial fluid.
- acts as a shock absorber in joints.
- signals for other cells within the body to respond.
- Hyaluronan also acts as a signalling molecule by interacting with cell surface receptors and regulating cell proliferation, migration, and differentiation.
- helps deliver nutrients to and carry toxins from cells that do not have a blood supply, such as those found in cartilage.
- encourages water retention in other bodily tissues.
- moisturizes and binds water to the skin.
- prevents tissue dehydration.
- fills fluid in spaces between cells.
- holds cells together.
- helps to heal the body.
- helps relieve pain.
- prevents scarring.
- serves as a barrier against disease.
- promotes a youthful appearance.
- enhances transport of drugs via HA-human growth hormone complex

As mentioned above, skin HA accounts for most of 50% of total body HA.

The HA content of the dermis is significantly higher than that of the epidermis, while papillary dermis has much greater levels of HA than reticular dermis.

HA in the dermis regulates water balance, osmotic pressure and ion flow and functions as a sieve, excluding certain molecules, enhancing the extracellular domain of cell surfaces and stabilizes skin structures by electrostatic interactions.
Unfortunately, exogenous HA is cleared from the dermis and is rapidly degraded.

It also follows that the water-binding capacity is directly related to the molecular weight of the HA molecule. Up to six liters of water may be bound per gram of HA. [1,000 times its HA molecular weight in water].
The HA molecule acts like a cellular sponge.

Chemistry of hyaluronic acid

- Hyaluronic acid is a polymer whose unit consists of D-Glucuronic acid and N-Acetyl Glucosamine. Hyaluronic acid chains can be up to 25,000 units long or even longer; their molecular weight ranging from about 5,000 to 20,000,000 Daltons.

- Hyaluronic acid is synthesized by the enzymes called hyaluronan synthases. Humans have at least three types of hyaluronic acid
synthases:

- HAS1, HAS2, and HAS3. HAS1 and HAS2 synthases produce high molecular weight HA whereas HAS3 produces low molecular weight

- HA. Hyaluronic acid is degraded by the enzymes called hyaluronidases, of which there also appear to be several types.

Hyaluronic acid and skin physiology

Hyaluronic acid has many functions throughout the body, especially in the connective tissue. In the skin, some of its known roles are the following:

- Holding moisture
- Increasing viscosity and reducing permeability of extracellular fluid
- Contributing to mechanical resilience and suppleness of the skin
- Regulation of tissues repair
- Regulation of movement and proliferation of cells
- Regulation of immune and inflammatory responses

It is important to note that physiological effects of hyaluronic acid depend to a large degree on the size (molecular weight) of its chains.

In particular, relatively small HA molecules (weighing less than about 20,000 Da) appear to trigger the early phases of wound healing, including activation of various types of immune cells and inflammatory responses.

This is understandable, considering that tissue injury would typically result in increased degradation of the extracellular matrix (and HA in particular), it makes sense that the degradation fragments (i.e. small size HA fragments) would act as indicators of injury and trigger wound healing.
On the other hand, large HA molecules appear to suppress local immune response and inflammation.

By the similar logic, the predominance of large HA molecules sends a signal that the skin is intact and defense and/or repair are not required.

NOTE:
By the age of 40 the natural production of HA drops to 50% of what you were born with. By the age of 60 it drops to 10%.

Important reasons to start using a skin care product that contains a high concentration of all 3 types of HA past the age of 35.

High performance products are not cheap, but worth their weight in gold when you consider the amount of work that they can do in maintaining a youthful and healthy, looking skin.

Excerpt from: http://www.freegrab.net/Hyaluronic%20acid.htm
Excerpt from: http://www.smartskincare.com/skinbiology/skinbiology_hyaluronic-acid.htm