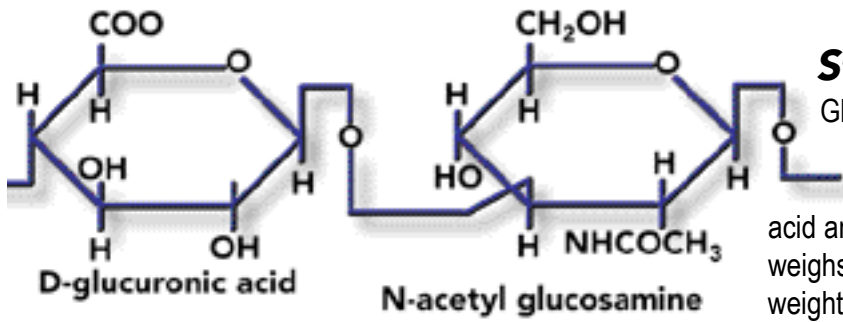




Internal
Rejuvenation
for Beautiful,
Healthy
Skin

SOFT GEL
TECHNOLOGIES INC.

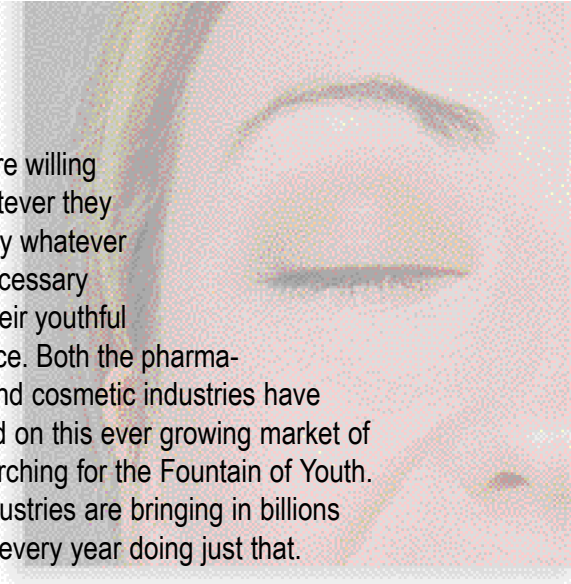


Structure

Glycosaminoglycans (GAG) are linear, unbranched, high molecular weight polysaccharides containing a repeating disaccharide unit (D-glucuronic acid and N-acetyl glucosamine). HA, in its natural state, weighs anywhere from 1.2 – 1.5 million daltons. Its weight lends itself to high viscosity and excellent lubrication within the body. The other glycosaminoglycans in the body include chondroitin sulfate, keratin sulfate, dermatan sulfate, and heparin sulfate.

Face Value

Women are willing to do whatever they need to, by whatever means necessary to keep their youthful appearance. Both the pharmaceutical and cosmetic industries have capitalized on this ever growing market of those searching for the Fountain of Youth. These industries are bringing in billions of dollars every year doing just that.



The nutritional supplement industry has fallen way behind...until now. Injuv® is here! It is the only *low molecular weight* oral hyaluronic acid (HA) available. With its amazing absorptive capabilities, Injuv® can moisturize from the inside out. It helps to alleviate the appearance of fine lines, improves joint health and the quality of the synovial fluid. The active ingredient in Injuv® may also aid in wound healing, while diminishing the severity of keloid scars. Sound too good to be true? Read on!

Discovery of HA

In 1934, Karl Meyer isolated a formerly unknown glycosaminoglycan from the vitreous humor of the bovine eye. It differed from any of the other previously discovered glycosaminoglycans in that it did not contain sulfur. With its distinctive structure, its function within the body was unique. It was named hyaluronan and further scientific study ensued. At the time of its discovery, the new compound took on two names: hyaluronan when referring to its endogenous synthesis (*in vivo*) and hyaluronic acid when discussing research conducted outside of the body - human or animal (*in vitro*). Today hyaluronan is commonly referred to as hyaluronic acid, regardless of the context in which it is spoken.

Location

Hyaluronic acid has been difficult to detect until the recent advances in science. It is now known that HA is a large constituent of the extracellular matrix (ECM).

Extracellular Matrix

The components of the ECM are produced within the cells and then secreted to the extracellular space. The ECM is comprised of structural proteins, specialized proteins and proteoglycans. It is the proteoglycans in conjunction with hyaluronic acid that trap huge

amounts of water within the ECM. The ECM is found throughout the skin, connective tissue and cartilage.

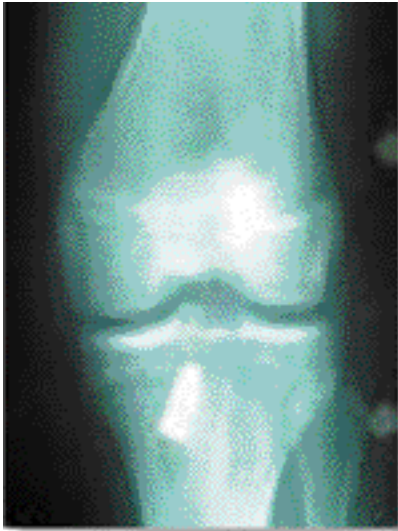


Proteoglycans

Proteoglycans are macromolecules that are distributed throughout the body. They are comprised of a varied number of glycosaminoglycans and protein. The combination of a glycosaminoglycan with a protein produces a new compound with distinctive functions. Proteoglycans are found predominantly in the connective tissue and cartilage, a specialized form of connective tissue. This tissue supports and binds other tissues and organs.

Cartilage

Hyaline cartilage is the most abundant cartilage in the body. It serves to add structural and flexible support. The



proteoglycans within the hyaline cartilage are shaped like a bottle brush, with HA making up the backbone of the brush. Without the strength of the backbone, the proteoglycan falls apart, leaving the cartilage to deteriorate.

The cartilage is avascular, as it contains no blood vessels. It is unable to be fed its needed supply of nutrients by the blood. It must be fed by the synovial fluid.

Synovial Fluid

The synovial fluid is produced within the synovial membrane and secreted to the extracellular space. Its main function is to act as a lubricant for the joints as it sits within the joint cavities. It also provides nutrients to the joints and the surrounding cartilage, as well as removes the metabolic waste produced by the cartilage.

The most predominant glycosaminoglycan found within the synovial fluid is hyaluronic acid. Without the appropriate levels of HA, the synovial fluid loses its ability to perform, thereby leaving the joints unprotected and the cartilage undernourished.

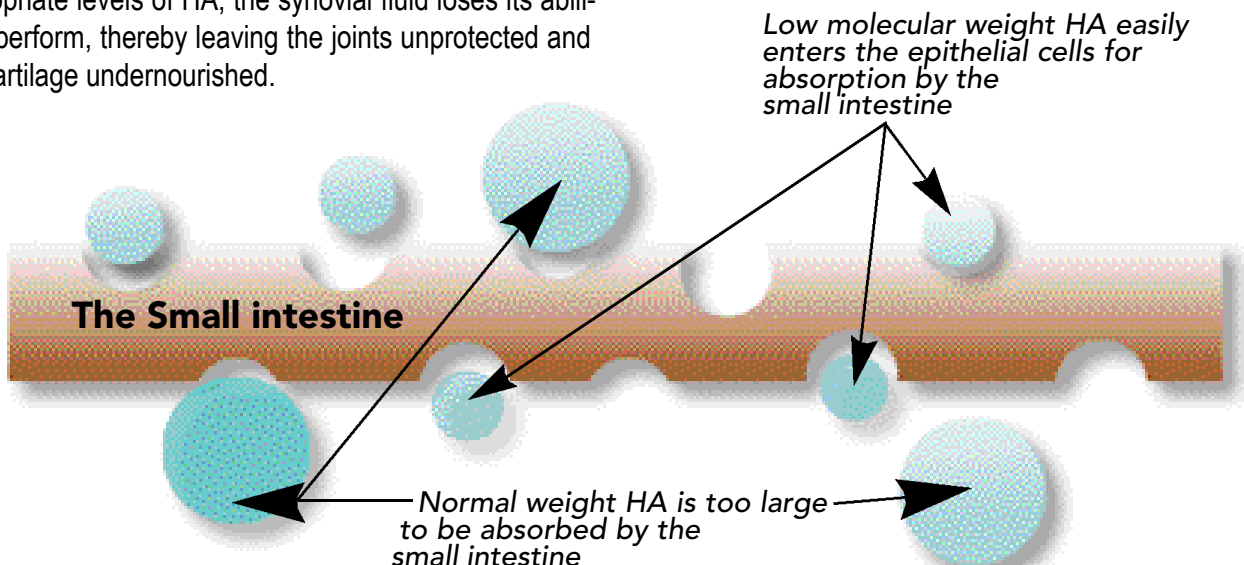
What is Injuv®?

The starting material for the hyaluronic acid found in Injuv® is rooster combs. The combs of the rooster have been used for more than 20 years as a source of HA. The public is most familiar with injectable HA, due to its relatively common use by the medical community for the prevention of pain and its healing properties for osteoarthritis of the knee. Its success has been attributed to its natural viscosity and ability to penetrate the extracellular matrix of the connective tissue.

An additional advantage of utilizing this source is that it has been clinically shown that the purified HA in injectable form does not possess significant humoral or cell mediated immunological activity. Stated in simpler terms, no allergic response occurs.

In Europe, HA has been approved for injection to help correct skin contours, as well as help to decrease the appearance of lines and wrinkles. It also has been injected to improve the appearance of scars.

Orally administered HA is different than injectable HA. The very properties that make injectable HA so successful, are the same ones that make it impossible to be absorbed in oral form. Absorption is the uptake of substances into or across tissues. When referring to HA absorption, it must be able to enter the epithelial cells of the small intestine before it can enter the bloodstream and make its way to its intended target sites. In its natural state, the molecular weight of HA makes it impossible for oral absorption.



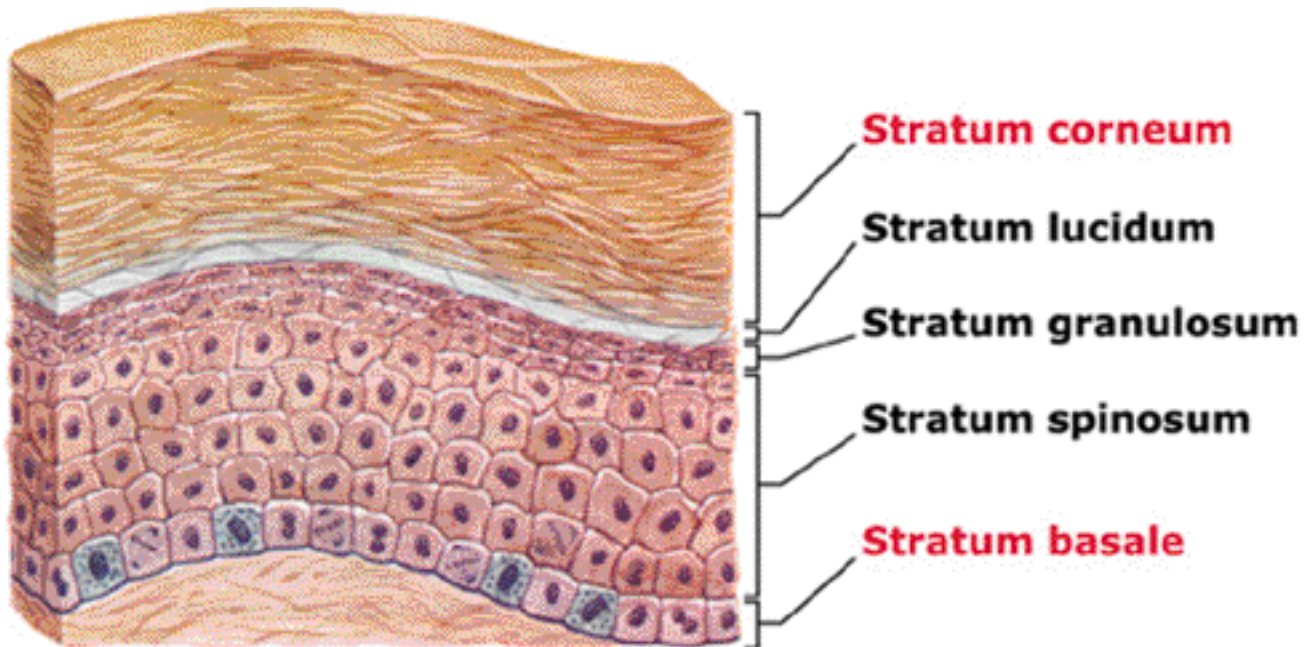
The scientific community was faced with a dilemma. Knowing that HA is essential to the health of the extracellular matrix, synovial fluid, skin, cartilage and one of the main components for proper healing of scars, **how could it be made into an absorbable form?**



An answer was found in Japan. A process was developed whereby HA was treated enzymatically to produce polymers. The process was patented in Japan (Patent no. 2971860) and is unique to Injuv®. The original starting material weighs anywhere between 1.2 - 1.5 million daltons. The polymers weigh 5,000 daltons. This low molecular weight HA can be absorbed by the intestinal tract, proven by case studies and pharmacological data.

HA, Aging and the Skin

Fifty percent of the HA in the body can be found in the skin located throughout the ECM and the connective tissue.



sue. Two schools of thought exist regarding aging and HA. The original theory was that HA synthesis decreases with age. The other is that a shift can be measured as HA levels increase in the lower layers of dermis, while the upper layers of the epidermis show a steady decline. Regardless of which scientific theory is chosen, the result is the same...Without the proper levels of HA in the upper layers of the epidermis, the skin appears dull and wrinkled.

Injuv®, Breakouts and the Skin

A great deal of clinical research has been conducted on retinoic and glycolic acids, both used to treat severe acne and photoaging (sun damage) in adults. Retinoic acid is a form of vitamin A and low levels in the epidermis have been shown to induce hyperkeratosis, a breakdown of the corneal layer of the skin. Retinoids have often been used in the treatment of such disorders.

Biochemical and microscopic analyses illustrated that epidermal tissue treated with retinoic acid stimulated the synthesis of hyaluronic acid. The other glycosaminoglycans were not changed in the epidermis. HA levels remained elevated 5 days after the cessation of retinoic acid.

Glycolic acid, also known as AHA (alpha-hydroxy acid), has been used to treat keratinization disorders. Keratin

is the primary constituent of the epidermis. Keratinocytes are specialized skin cells that migrate from the bottom layer of the epidermis (stratum basale) up to the top layer (stratum corneum) where they undergo keratinization. This last step is also known as terminal differentiation or cell death.

An *in vivo* study was conducted on the forearms of female subjects. One arm was treated with a 20% gly-

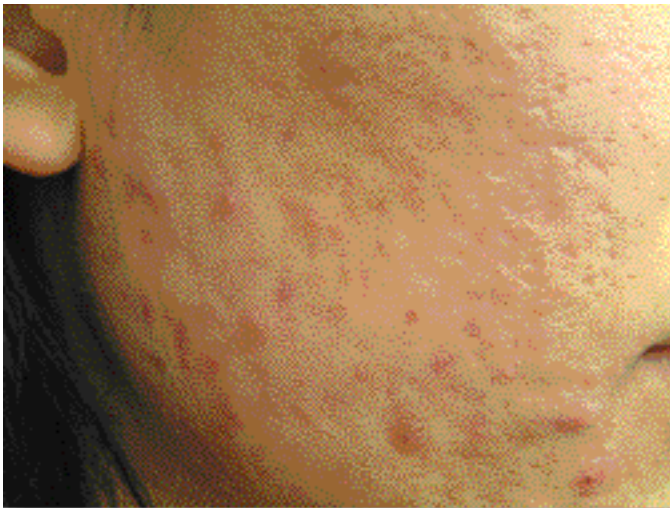
colic acid lotion and the other was treated with lotion alone. Measurement of HA in the epidermal tissue was evaluated by a special staining process. The forearm treated with glycolic acid showed a total twofold increase in HA staining or an increase of 180%.

The study concluded that the forearms that had been treated with the glycolic acid solution two times daily for 3 months demonstrated an increase in epidermal thickness, accompanied by an increase in both epidermal and dermal staining for HA. These alterations can result in changes in appearance, texture, and functional ability.

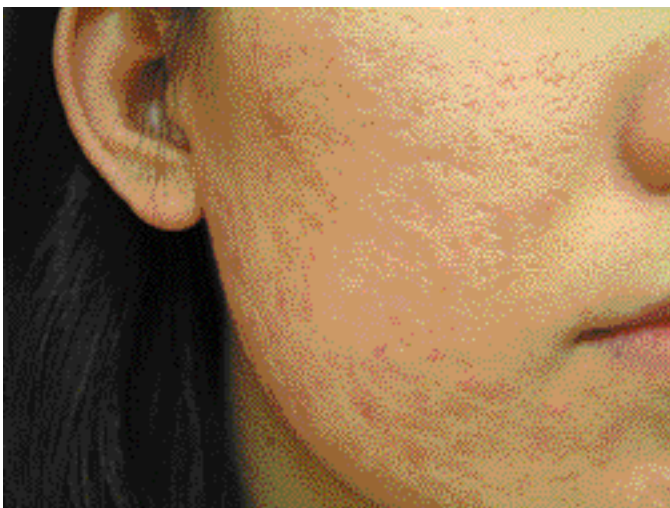
Retinoic acid and glycolic acid have been used for years by dermatologists with established positive effects on acne and skin damage due to excessive exposure to the sun. Much of the success of these pharmaceutical products is due to the increase in HA in the epidermal layers.

Injuv® gets absorbed from the inside out. After entering the intestinal tract, it moves through the bloodstream to enter the extracellular matrix of the skin, from dermis to epidermis. With sufficient amounts of HA in the ECM of the skin, the keratinocytes survive longer. This survival leads to a more youthful appearance of the skin.

Before Injuv® supplementation



Before Injuv® supplementation



*After 2 weeks Injuv® supplementation
(6 soft gels daily)*



*After 2 weeks Injuv® supplementation
(6 soft gels daily)*

Injuv® and Keloid Scars

During the early stages of normal wound healing and repair, higher levels of hyaluronic acid are present. HA has the ability to hold onto large amounts of water, thereby opening up tissue spaces and allowing for cell proliferation, movement and an undifferentiated cellular state.



Fetal wound repair has been extensively studied and it has been hypothesized that the very high levels of HA present that lead to scarless healing are caused by inhibition of platelet function, aggregation (clumping) and cytokine release.

A keloid scar can be defined as one that is sharply elevated, irregularly shaped and progressively enlarging with a high rate of collagen synthesis. Keloids have also been defined as benign dermal tumors. These scars tend to be very unsightly and aesthetically bothersome.

In a study conducted at University of California at San Francisco, an *in vitro* study clearly illustrated the difference in HA levels between keloid-derived cells and normal skin and scar fibroblasts. The keloid-derived cells showed significantly diminished levels of HA. This leads to the onset of cell differentiation and collagen deposition. The HA abnormality can be seen in both the overlying epidermis and the dermis of the keloid.



Note the healing of the stitch marks, the flattening of the scar, and the lessening of the redness after a little less than 4 months of Injuv® supplementation.

42 year old male with removal of tumor by surgical intervention from the inside portion of the upper arm. Approximately 10 weeks after surgery (73 days), the subject began taking Injuv® (6 soft gels/day).

Conclusions Drawn

Injuv® is the only low molecular weight hyaluronic acid that has undergone laboratory testing to prove its absorptive capabilities. It has the potential to help eliminate the appearance of fine lines and wrinkles, improve the appearance of scars, and support the quality of the synovial fluid and joint health. Injuv® is the cosmeceutical that moisturizes from the inside out.

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