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The Ingredients *Column*

Plumping and Volumizing Technologies in Skin Care



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As different aging processes take over, the need for ingredients and procedures that target loss of volume increases with age. Gradual alteration of the extracellular matrix leads to loss of elasticity, just as changes in adipose tissue distribution lead to structural aging due to lipotrophy (loss of adipose tissue). This loss of matter and structure, along with reduced skin elasticity, results in sagging tissue and modification of volume; the face creases, deep folds and wrinkles appear, and jowls and ptosis (drooping of the eyelids) advance.

Numerous anti-aging methods, such as minimally invasive injectable fillers, including hyaluronic acid, collagen and fat cells, lasers, radiofrequency, iontophoresis, light-emitting diode (LED), and dermabrasion, as well as non-invasive topical treatments, such as topical retinoids and chemical peels that target loss of volume, have been developed and used along with plastic surgery. A fairly large number of products designed to support the results of volume-inducing modalities and procedures have also been developed and sold successfully by both doctors and skin care professionals. Many of them feature collagen amino acids, various forms of hyaluronic acid and vitamin C, alpha hydroxy acids, retinol, and various plant extracts whose main function is to protect freshly-formed proteins from enzymatic degradation. Growth factors, as well as growth factor up-regulators, such as carob seed extract, can also be helpful in increasing the volume of aging skin. Most recently, studies show that several plant stem cell extracts, as well as some of the recently launched peptides and amino acids, show promising volumizing and wrinkle-plumping results.

Given the choices, when addressing loss of volume, this industry continues to offer the most successful strategy – not to focus on one single technology, but instead incorporate a combination of ingredients that target many natural mechanisms involved in the repair and regeneration of the youthful structure of skin.

Matrix Reigns Supreme

Sederma, a French manufacturer, launched Matrixyl® peptides over two decades ago and changed the landscape of wrinkle-fighting and volume-restructuring products forever. In 2015, the Matrixyl line won the 25 Years of Innovation Award, naming Matrixyl as the ingredient with the greatest impact on the personal care market in the last quarter-century. Since

2000, these peptides have evolved into a range of active ingredients, providing advanced results in age-fighting formulations. The latest of these ingredients, Matrixyl Synthe'6, particularly focuses on advanced-volumizing technologies. The peptide mimics the human extracellular matrix-derived peptide, matrikine. This peptide acts as a cellular messenger to regulate the skin's natural repair mechanisms and stimulate production of six major constituents (collagen I, II, IV, fibronectin, hyaluronic acid, and laminin 5) of the tissue matrix that gives skin its structure. When promoting the structural constituents of the skin's deeper layers, skin becomes more elastic, firm, smooth, and volumized. In addition, significant wrinkle reduction is measured in the forehead and crow's feet, as well as visible smoothing and filling of lines in those areas.

It Takes Three to Tango

Elastin provides elasticity of the skin, collagens provide firmness and density, and glycosaminoglycans give hydration and volume. Collagen and elastin are complex three-dimensional proteins generated by fibroblasts. As we age, fibroblasts lose their ability to manufacture these connective fibers and enzymes break down preexisting collagen and elastin. Fibroblasts require three basic components to promote a higher rate of production of collagen and elastin: essential amino acids to act as building blocks, enzymes to activate the process, and high amounts of energy.

Swiss ingredient manufacturer Induchem launched their needle-free filler and plumper, Neodermyl® in 2013. This complex of amino acids, enzymes, and energizers was In Cosmetics' 2013 gold awarded active for boosting collagen and elastin production by reviving aged fibroblasts. It acts in the extracellular matrix where the three major contributors of youthful skin reside: elastin, collagen, and glycosaminoglycans, the most

famous being hyaluronic acid. Neodermyl, a complex of those three components, activates aged fibroblasts and enables it to function properly again. In clinical studies, Neodermyl shows the same efficacy in reduced wrinkle depth in two weeks as a needled injection of collagen by a plastic surgeon. This effect is achieved because skin collagen density is multiplied by 7.5 times in only two weeks when Neodermyl is used at one percent in skin care formulations. It plumps the skin and provides elasticity to smooth, volumize, and retexture from the inside out.

Let's Talk About Fat, Baby!

In addition to wrinkles and sagging tissues, the loss of volume around cheeks, cheekbones, and temples is one of the major characteristics of aging, deeply marking the face over the years. The adipose tissue and facial muscles act as a real support layer, maintaining the shape and harmonious contours of the oval aging face; muscle tone diminishes, while reduced and redistributed subcutaneous fat moves and accumulates in the lower part of the face.¹

French ingredient manufacturer Silab received the Cosmetics & Toiletries R&D Award in 2014 in the best new ingredient category for its innovative active Volunage®. Rich in peony oligosaccharides (*Paeonia albiflora*), Volunage is a natural re-plumping ingredient that combats premature ag-

ing by regulating and controlling cellular communication between the reticular dermis and hypodermis. This, in turn, preserves the functionality of adipocytes and facial muscles, counteracting loss of structure and correcting sagging at the deepest level by limiting pro-inflammatory responses of the hypodermis due to photo exposure. During regular sun exposure, fibroblasts in the dermis and keratinocytes in the epidermis start a chain of cellular communications, initiating inflammation and triggering signals that travel to the underlying adipocyte cells in the hypodermis.² These messages cause metabolic alterations that can contribute to the deterioration of volume and firmness; with Volunage, this can be limited by reducing the pro-inflammatory cytokines released during the response. Working with the function of the adipose tissue and facial muscles, this ingredient is designed to address the loss of volume around cheeks, cheekbones, and temples that cause features to draw inward, sag, and fold. Under the targeted effect of Volunage, a re-plumping effect is achieved due to the increase in the thickness and volume of adipose tissue, allowing skin to regain its density and elasticity. Facial features are harmonized and the skin looks younger.

Patience in an Impatient World

Technologies that activate long-term volumizing and plumping from the inside out take at least two to four weeks

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of consistent product use to obtain results. The skin is regenerating its structure by promoting repair and reviving biological functions that have become tired due to years of abuse, thus, sufficient time needs to be given for it to respond to new ingredients.

Even though most clients recognize that good things indeed come to those who wait, the desire for quick results when purchasing volumizing products is hard to ignore. In the past, these quick fixes often consisted of ingredients that stimulated blood flow or induced irritation that would inevitably lead to swelling. Today, such strategies are avoided and the most frequently-used ingredients for instant gratification are hyaluronic filling spheres, as they have a proven track record as instant line-fillers. This technology is based on dehydrated spheres that can rapidly provide volume to the superficial layers of the epidermis. The filling spheres utilize hyaluronic acid's unique characteristic to absorb large amounts of water by applying them to the skin in their dehydrated form. Once applied, they start to absorb water evaporating from the skin, or the transepidermal water loss. This causes the hyaluronic acid to swell and penetrate the epidermis. The forces exerted by the swelling of the hyaluronic spheres in the epidermis help smooth skin lines and keep the epidermis hydrated. Volumizing via hyaluronic acid is not a permanent

solution and does not necessarily reverse wrinkles and sagging, but it is a much healthier and effective alternative to other quick fixes, such as inflammation-inducers.

Novel, award-winning ingredients with proven volumizing efficacy and real life results offer a new dimension of results in anti-aging products. One of their biggest benefits is that they allow skin care professionals to obtain results by working with the skin's natural functions, rather than by stressing the skin.

References:

1. Cartwright M.J., Schlauch K., Lenburg M.E., Tchkonja T., Pirtskhalava T., Cartwright A., Thomou T., Kirkland J.L. (2010). Aging, Depot Origin, and Preadipocyte Gene Expression. *Journal of Gerontology: Biological Sciences*, 65(A), 242 – 251.
2. Imokawa G. (2009). Mechanism of UVB-Induced Wrinkling of the Skin: Paracrine Cytokine Linkage between Keratinocytes and Fibroblasts Leading to the Stimulation of Elastase. *Journal of Investigative Dermatology Symposium Proceedings*, 14, 36 – 43.

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