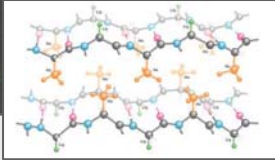


DC Upregulex

Sericin peptide-filled vesicles offer skin-stimulatory nutrition for improving firmness, elasticity and youthful skin resilience



During the Ming Dynasty, the most famous physician of the royal court, Dr. Li Shih-Chen recorded in his book "Classical Chinese Material Medica", the improvement of the skin after use of the sericin (silk) powder.

Today anti-aging skincare can be formulated with select sericin peptides delivered via multi-layer vesicles. DC Upregulex with high active solids contains sericin peptide-stimulators which provide cellular nutrition and stimulation for up-regulating dermal matrix renewal. DC Upregulex can be formulated into skin care products for the purpose of restoring attractive youthful skin appearance, and supporting general skin health.

Skin Care Applications

- Anti-aging care for wrinkled, sagging and unevenly toned skin
- Stretch mark prevention and anti-aging body care formulations
- Nutrition-hydration support for fragile and dry skin conditions

DC Upregulex renews aging skin and improves youthful skin appearance

- Firms and plumps sagging skin
- Evens skin tone and brightens eliminating dull and patchy skin
- Smooths and fills lines and wrinkles
- Hydrates both internally and externally

DC Upregulex activates multiple dermal renewal processes

- Stimulation of collagen (firms skin by supporting dermal matrix)
- Stimulation of hyaluronic acid (plumps and improves elasticity and moisture)
- Inhibition tyrosinase activity (eliminates uneven skin tone)
- Supports cell proliferation and tissue remodeling action

DC Upregulex 400X magnification



DC Upregulex: Sericin peptide-filled multi-layer vesicles

DC Upregulex utilizes highly skin-active fractions of sericin peptides delivered with a soy phospholipids vectorizing carrier.



Distinctive Cosmetic Ingredients, LLC

801 Montrose Avenue, South Plainfield, NJ 07080

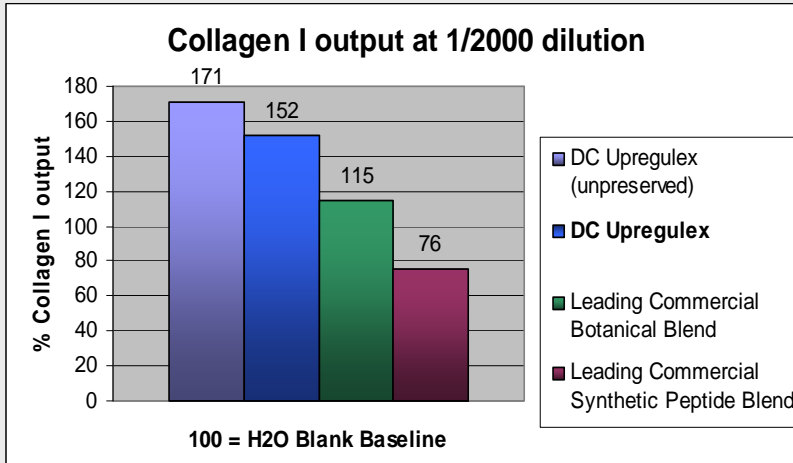
Tel. (908) 226-5123 Fax. (908) 226-1514

www.dcingredients.com

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Collagen Stimulation by Human Dermal Fibroblasts

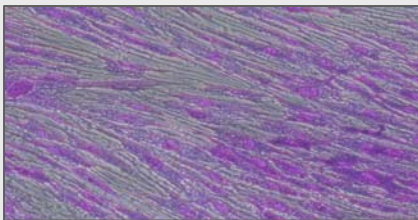


Collagen I, found in greater abundance in youthful skin, is a main dermal matrix component which helps skin remain elastic, firm and wrinkle-free.

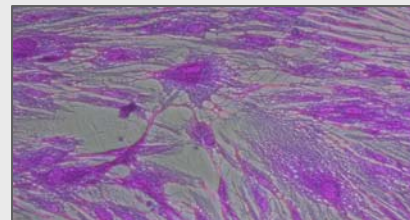
DC Upregulex demonstrates a superior collagen stimulating performance over leading commercial active skin care ingredients with similar claims.

Cellular Nutrition & Bio-Compatibility

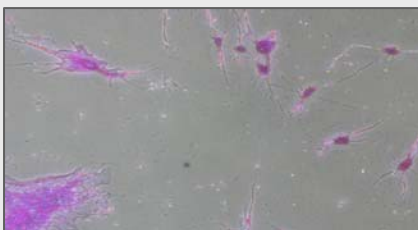
DC Upregulex has excellent non-toxic bio-compatibility with human cells and provides a stimulating and nourishing environment for human fibroblast cells to remain active producing collagen and other dermal matrix components.



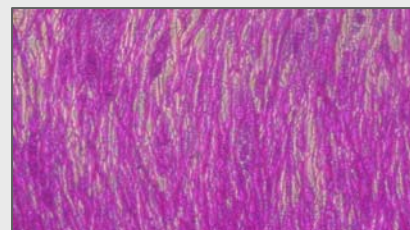
Control Human Cells



Treated with 0.5% Leading Commercial Synthetic Peptide Blend



Treated with 0.5% Leading Commercial Botanical Blend



Treated with 0.5%
DC Upregulex

Distinctive Cosmetic Ingredients, LLC

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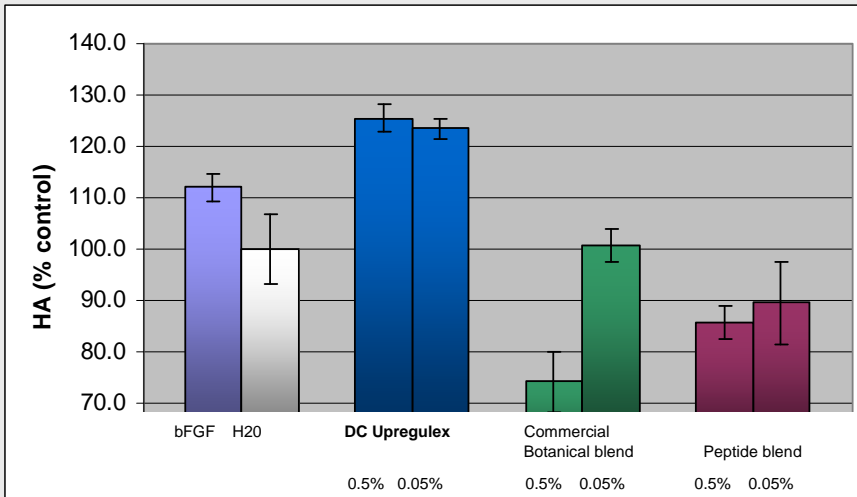
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Hyaluronic Acid Stimulation by Human Dermal Fibroblasts

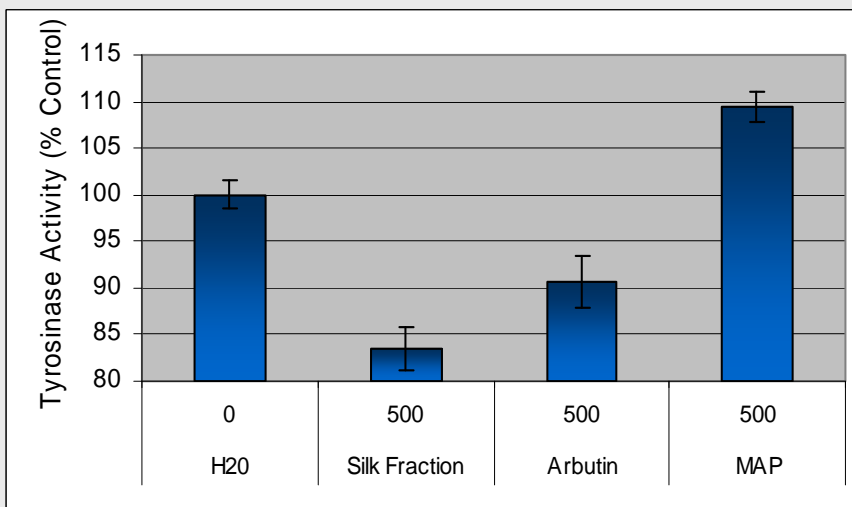


Hyaluronic acid is a water binding glycosaminoglycan (GAG) biopolymer found in both the dermis and epidermis. Hyaluronic acid along with collagen and elastin constitutes the extracellular matrix (ECM). With decreasing levels of HA skin becomes dry and brittle, creating the look of aging, wrinkled skin.

DC Upregulex significantly stimulates HA bio-synthesis in comparison to leading products with similar claims.

METHOD: HA assay was performed using Hyaluronan Enzyme-Linked Immunosorbent Assay Kit (HA-ELISA, cat. # K-1200) from Echelon (Salt Lake City, UT).

Effect of Sericin Peptides, Arbutin and MAP on tyrosinase enzyme activity in vitro at 500ug/ml.



The Silk fraction utilized in DC Upregulex has been shown to inhibit tyrosinase enzyme activity.

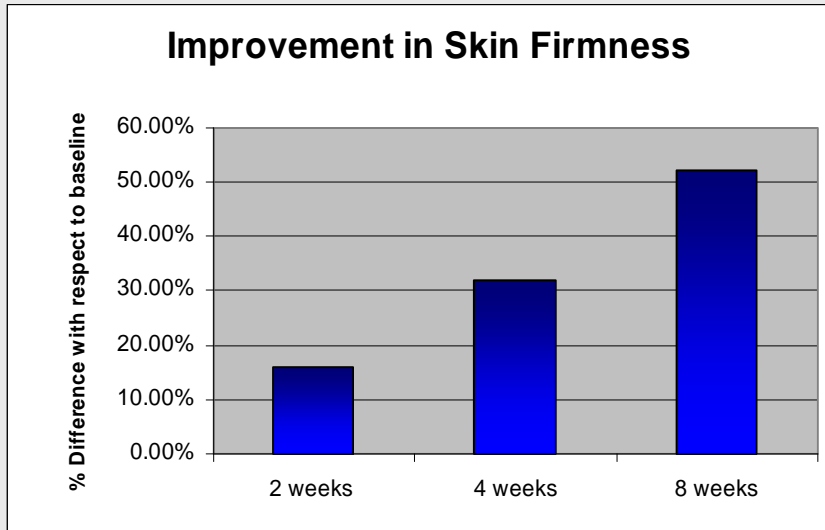
The in-vitro study suggests that DC Upregulex may help even skin tone and reduce areas of hyper-pigmentation.

Tyrosinase activity was measured according to the method by Pomerantz (1964)

DC Upregulex

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In vivo Cutometer – R7 Biological Elasticity



Significant ($p=0.01$) improvement in skin elasticity/firmness with respect to baseline measurement was observed after 4 and 8 weeks.

Photos after 4 weeks



Visible improvement in skin tone and reduction in patchy redness



DC Upregulex

Sericin peptide-filled vesicles offer skin-stimulatory nutrition for improving firmness, elasticity and youthful skin resilience

Human Gene Expression via Microarray demonstrates skin supportive regulation

Probe #	Gene Name	Modulation (%)	Significance
210619_s_at	hyaluronoglucosaminidase 1	-13	Digestion of Hyaluronic acid
205524_s_at	hyaluronan and proteoglycan link protein 1	+30	Assembly and stabilization of extracellular matrix
214023_x_at	tubulin, beta 2B	+134	Building blocks of intracellular architecture and tensegrity
207329_at	Matrix metalloproteinase 8	-16	Digestion of extracellular matrix proteins
206125_s_at	kallikrein-related peptidase 8	-16	Protease of Serpin family
212865_s_at	collagen, type XIV, alpha 1 (undulin)	+19	Extracellular matrix protein
204320_at	collagen, type XI, alpha 1	+16	Mediates interactions between cells and extracellular matrix
203477_at	collagen, type XV, alpha 1	+19	This chondroitin sulfate proteoglycan is secreted, among others, by fibroblasts endothelial cells and smooth muscle cells, contributes to cell polarity, as it is localized in basement membrane
215078_at	superoxide dismutase 2, mitochondrial	+68	Antioxidant enzyme
213519_s_at	laminin alpha2	+18	Laminins are the major non-collagenous component of the basal lamina, such as in epithelium. They are glycoproteins that are an integral part of the structural scaffolding of basement membranes. Laminins are secreted and incorporated into cell-associated extracellular matrices. They are shaped like a cross.
218755_at	Kinesin 20A	+45	Molecular intracellular motor (ATPase)
207386_at	Cytochrome P450	+19	Detoxification
206756_at	carbohydrate(N-acetylglucosamine6-O) sulfotransferase 7	+15	Catalyses production of glycans essential for cell adhesion to extracellular matrix
206751_s_at	phosphate cytidyltransferase 1, choline, beta	+21	Controls the synthesis of phosphatidylcholin, an essential component of cell membranes

INCI name	Water (and) Butylene Glycol (and) Phospholipids (and) Hydrolyzed Sericin
Recommended use level	2-6%
Formulation Parameters	Add below 40°C, pH 4.0-8.0
References	<u>Preparation of Silk Protein Sericin as Mitogenic Factor for Better Mammalian Cell Culture</u> ; Satoshi Terada; <i>Journal of Bioscience and Bioengineering</i> ; Vol.100, No.6, 667-671, 2005