

Biofunctionals for facial care: New approach to addressing the signs of ageing

Biofunktionelle Wirkstoffe für die Gesichtspflege: Neuer Ansatz gegen Alterszeichen

Background Information

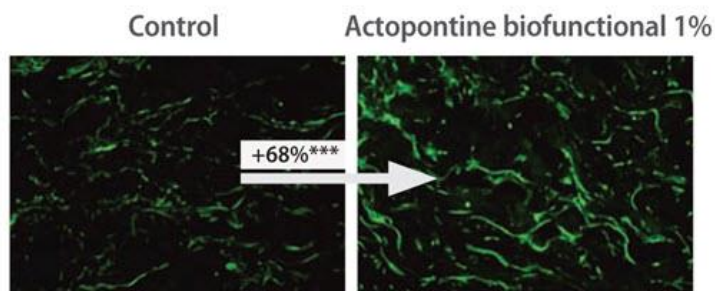
Ashland Care Specialties introduces a bio-engineered peptide based on the skin's foundation

(Actopontine biofunctional)

Ashland Care Specialties, a business unit of Ashland Specialty Ingredients, today announced Actopontine™ biofunctional, a bio-engineered peptide designed to support skin's own production of a key protein called dermatopontin. Dermatopontin is believed to be one of the most important proteins necessary to rebuild the foundation of skin.

Ashland's new offering is the first commercially available peptide demonstrated in vitro and ex vivo to increase the presence of a series of proteins known to facilitate the foundation of skin.

"Your skin is only as good as its foundation," said Anne Clay, marketing manager, skin care biofunctionals, Ashland Care Specialties. "Actopontine biofunctional is conceived as a potential pathway to help skin restore its foundational proteins that



*** Thicker collagen fibers are apparent in immunostained samples, with the Actopontine biofunctional-treated area displaying a highly significant 68 percent improvement.

diminish with age and ultimately cause skin to sag and lose its critical collagen integrity. Actopontine biofunctional provides skin care formulators with an entirely new approach to resupplying the skin's extracellular matrix with the proteins it may require to enhance skin density and skin elasticity."

A collaboration of proteins

Skin's extracellular matrix consists of approximately 300 core proteins that interact to continually rebuild and remodel vital

structural components. Dermatopontin is one of the key proteins - a glycoprotein - that binds with collagen and "collaborates" with other proteins to reinforce the foundational structure of skin. A protein normally synthesized by fibroblasts, dermatopontin is vital to a whole series of biological processes associated with normal skin. With aging and stress, however, these biological processes change, leading to a precipitous drop in type I collagen, fragmented collagen fibers and other deleterious effects.

Reversing collagen decline

Studies have shown that as aging occurs, type I collagen in consumers may decrease by as much as 68 percent between the ages of 30 and 80. TGF- β 1 signaling is reduced, further decreasing the transcription of collagen genes. Senescent fibroblasts accumulate. Fibroblasts, in addition, resort to a mechanically relaxed shape, leading to less contact with collagen fibers and lower collagen production. Maintaining collagen, however, is essential to youthful-looking skin. Actopontine biofunctional has been associated in ex vivo studies with an increase in collagens I and III.

Enhancing collagen fibers

Boosting the presence of dermatopontin in skin ex vivo, Actopontine biofunctional supports collagen fibrillogenesis. Skin biopsy from a 35-year-old female showed that an area treated with Actopontine biofunctional exhibited significantly thicker and longer fibers than in an area without treatment, suggesting an increased quantity of dermatopontin located on a thicker network of collagen fibers.

Ex vivo laboratory studies have also indicated that Actopontine biofunctional may significantly enhance the presence of other proteins associated with the extracellular matrix, such as laminin-5, key to the structure of the dermal-epidermal junction; and integrin- α 3 and fibronectin, two proteins known to play a role in remodeling the skin's matrix.

Cosmetic applications

Based on the results of in vivo and ex vivo testing, Ashland will support a range of cosmetic formulations, including anti-aging skin care products, formulations to advance skin firmness and elasticity, facial day and night creams and other body care formulations. "Nurturing the normal biological processes associated with rebuilding and remodeling skin's extracellular matrix is one of the most practical yet innovative approaches to anti-aging skin care. Actopontine biofunctional is aimed at restoring a youthful look to skin by facilitating the skin's own production of dermatopontin, a key glycoprotein required to set in motion collagen and other proteins that, collectively, support skin's matrix," said Clay.

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Lipigenine™ biofunctional

INCI Name: Water (and) Glycerin (and) Linum Usitatissimum (Linseed) Seed Extract

Lipigenine biofunctional is a flax seed extract designed to help the skin optimize lipidic homeostasis by targeting epidermal lipid synthesis.

Application: Skin Care

- Used in body care, color cosmetics and facial care applications.
- Ex vivo studies show that lipigenine may help boost skin lipid synthesis (ceramides, cholesterol, fatty acids)
May help favor lipid transportation and secretion by promoting lamellar bodies ex vivo
- May help target cholesterol synthesis (boosts HMG-CoA reductase enzyme expression ex vivo)
– in stress condition, lipigenine may help recover lipidic homeostasis
- Displays soothing property
- Provides visible results on stratum corneum protection after detergent stress
and on skin beautification (radiance, hydration, tonicity, elasticity)

Application: Sun Care

- Used in after-sun applications.
- Ex vivo studies show that lipigenine may help boost skin lipid synthesis (ceramides, cholesterol, fatty acids)
- May help favor lipid transportation and secretion by promoting lamellar bodies ex vivo
- May help target cholesterol synthesis (boosts HMG-CoA reductase enzyme expression ex vivo) –
in stress condition, lipigenine may help recover lipidic homeostasis
- Displays soothing property
- Provides visible results on stratum corneum protection after detergent stress and on skin beautification
(radiance, hydration, tonicity, elasticity)

Formulation: Divine Magix Elixir

DIVINE MAGIC ELIXIR 100-10093

Formula & procedure

Ingredients / Trade Name	INCI Name	%W/W	Supplier
Phase A			
Deionized Water	Water / Aqua	76.9	
RapiThix® A-100 polymer	Sodium Polyacrylate	0.70	Ashland
Phase B			
Rokonsal®/LiquaPar® MEP preservative	Phenoxyethanol (and) Methylparaben (and) Ethylparaben (and) Propylparaben	1.00	Ashland
Phase C			
KSG-210®	Dimethicone (and) PEG-10/15 Crosspolymer	5.00	Shin Etsu
Cyclopentasiloxane		2.00	
KSG-16®	Dimethicone (and) Dimethicone/Vinyl Dimethicone Crosspolymer	10.00	Shin Etsu
Phase D			
Amidon de Maïs MS1®	Zea Mays Starch	3.00	Sensient
Phase E			
Actopontine® bifunctional	Water & Butylene Glycol (and) Hexapeptide (proposed name)	1.00	Ashland
PT Lumilwhite®	Fragrance / Parfum (Alpha-Isomethyl Ionone (and) Limonene (and) Linalool)	0.40	Charabot
Total		100.00	

Add water to main beaker and begin homogenization. Heat to 60°C. Sprinkle in RapiThix A-100 polymer and mix well.
 Add phase B and mix until uniform. Begin cooling.
 Pre-mix phase C until smooth. Add to main beaker at 30°C, and mix until uniform.
 Sprinkle in phase D and mix until uniform.
 Add phase E and mix until uniform. Stop at 25°C.

Properties

Appearance: White cream
 pH: 6.0-6.4
 Viscosity: 35,000 – 40,000 cps (Brookfield RVT/Spindle TB/5RPM/1 minute/25°C)



Anti-aging formulations