



BioFer™
Sugar
Kelp

Sustainable
Rapid Firming



GREEN
LINE

INGREDIENTS

SUSTAINABLE FIRING FROM SUSTAINABLE FARMING

Fermentation is a clean and natural process that extracts a full spectrum of plant derived actives with enhanced bioavailability to boost efficacy and accelerate the onset of benefits to the skin. *Lactobacillus plantarum* is a beneficial, widespread species of lactic acid bacteria. It is commonly found in many fermented plant products such as sauerkraut, pickles, brined olives, and Korean kimchi.



LOCAL PRODUCTION:

Our sugar kelp (*Laminaria saccharina*) is hand harvested from the rocky, rugged and mostly uninhabited Maine coast between Bar Harbor and Eastport, on up to Grand Manan Island, Canada. The harvest season starts with sugar kelp in early April, with snowpack often still on the ground and the shallow coastal inlets still frozen. Harvesters gather the sugar kelp from the beds where they grow in remote bays. The harvesters are the first to don wet suits and get their boats in the water in early April. If it's too cloudy to solar dry the freshly harvested crop it may be dried indoors using wood heat or forced hot air. Our sugar kelp is always dried at mild temperatures to keep the enzymes and nutrients intact.

LOW ENERGY CONSUMPTION:

Fermentation is typically a low-energy process compared to other industrial methods. The microorganisms responsible for fermentation carry out most of the work, converting substrates into desired products with minimal energy input. This contrasts with energy-intensive processes such as chemical synthesis or high-temperature extraction methods.

REDUCED WASTE:

The fermentation process often produces fewer waste byproducts compared to traditional chemical processes. The microorganisms consume the substrates and convert them into desired compounds, leaving behind fewer undesirable residues. This can lower the environmental impact and simplify waste management.

INSTANT SKIN ELASTICITY:

Collagen boosting effects of BioFer™ Sugar Kelp

Biological variations in the aging process contribute to its unique pace for every individual. This difference is influenced by factors such as genetic makeup, lifestyle choices, environmental exposures, and overall health. Imbalance, disharmony, and disproportion within the aging process are responsible for the differing rates at which soft tissues and underlying support structures deteriorate.



A prominent and visible sign of aging is the development of wrinkles and a decrease in skin elasticity. These characteristics are reflective of the gradual atrophy of the dermis, the deeper layer of the skin. One of the primary mechanisms behind dermal atrophy is believed to be the reduction in the quantity of extracellular matrix (ECM), which includes various components such as collagen and elastin. Collagen plays a crucial role in maintaining skin integrity, as it constitutes a significant portion of the ECM. In fact, collagen fibers make up about 75% of the dry weight of the skin, providing it with both tensile strength and elasticity.

Sustainable approaches that support collagen synthesis and promote overall skin health are integral to these efforts. For our BioFer™ Sugar Kelp, the *Lactobacillus plantarum* can use the sugar and other nutrients in the *Laminaria saccharina* as their primary source of energy. As the fermentation process is completed, we are left with the metabolites of the *Lactobacillus plantarum* which include amino acids, antioxidants, and a plethora of compounds that boost collagen production and increase skin elasticity.



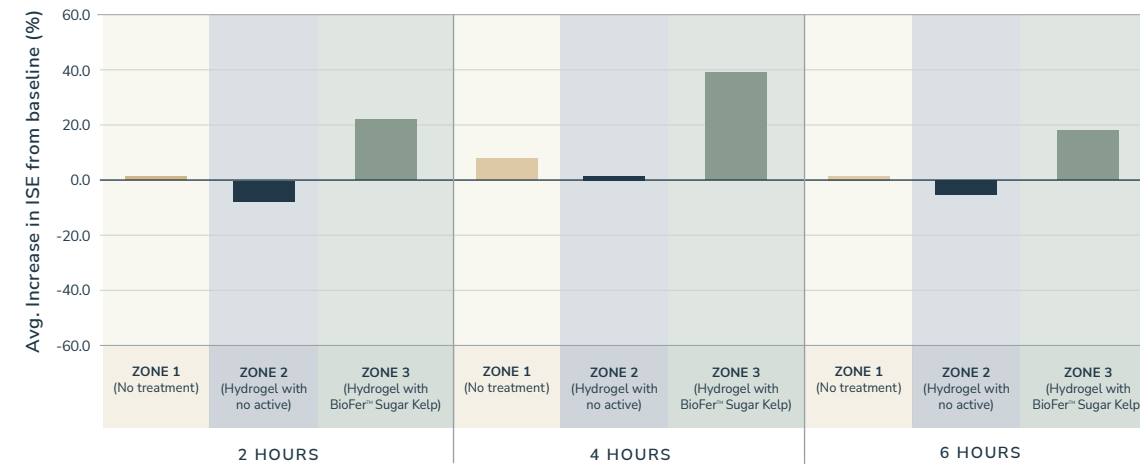
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BioFer™ Sugar Kelp: Sustainable Rapid Firming

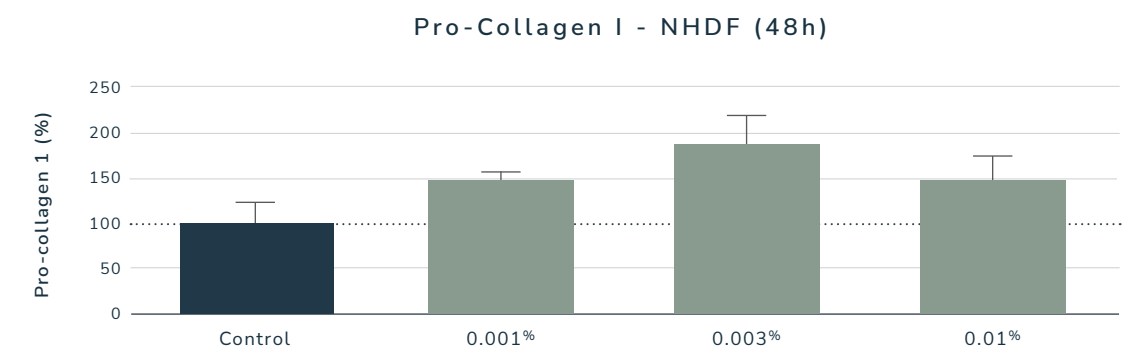
INCI: LACTOBACILLUS/LAMINARIA SACCHARINA FERMENT FILTRATE LYSATE

FIGURE 1:
Effect of a Hydrogel with 3.00% BioFer™ Sugar Kelp on Instant Skin Elasticity



SUMMARY: BioFer™ Sugar Kelp significantly increases skin elasticity when applied topically at 3.00% in an aqueous hydrogel system at any time up to 6 hours after application. BioFer™ Sugar Kelp is having a beneficial effect on the extracellular matrix of the skin, which can be attributed to compounds in the ferment that are used in biosynthetic pathways that produce components of that matrix which are involved in collagen production.

FIGURE 2:
Effect of BioFer™ Sugar Kelp in Synthesis of Collagen Type I alpha 1 Protein Levels



SUMMARY: The in vitro treatment for 48 hours in Normal Human Dermal Fibroblasts with BioFer™ Sugar Kelp at sub-cytotoxic concentrations displays antiaging and firming effects, substantiated in a significant increase of collagen type I levels, compared to the untreated control.

Ocean Eyes Firming Cream

FORMULA CODE: GLP-0005 VERSION DATE: 03/02/23

TRADE NAME SUPPLIER	INCI	%
PHASE A		
DI Water / Stock	Water	q/s
PHASE B		
GreenGard™ PA / Green Line	Phytic Acid (and) Water	0.10
Glycerin / Stock	Glycerin	2.00
Zemea / CovationBio	Propanediol	3.00
PHASE C		
Sclerotium Gum / Various	Sclerotium Gum	1.00
PHASE D		
GreenWax™ GL MB / Green Line	Cetearyl Alcohol (and) Glyceryl Laurate	6.00
PHASE E		
Imbue™ SF MB / Green Line	Water (and) Carthamus Tinctorius (Safflower) Seed Oil (and) Glycerin (and) Polyglyceryl-6 Stearate (and) Glyceryl Caprylate (and) Xanthan Gum (and) Rosmarinus Officinalis (Rosemary) Leaf Extract	10.0
Cetiol Ultimate / BASF	Undecane (and) Tridecane	3.00
GreenSens™ IL MB / Green Line	Isoamyl Laurate	2.50
Triheptanoin (and) Coco-Caprylate/Caprates (and) Dilinoleic Acid/Butanediol Copolymer (and) Castor Oil/IPDI Copolymer Elastomer	Triheptanoin (and) Coco-Caprylate/Caprates (and) Dilinoleic Acid/Butanediol Copolymer (and) Castor Oil/IPDI Copolymer Elastomer	5.00
PHASE F		
BioFer™ Sugar Kelp / Green Line	Lactobacillus/Sugar Kelp Ferment Filtrate Lysate	1.00
GLB White Willow Bark Extract AQ / Green Line	Water (and) Salix Alba (White Willow) Bark Extract (and) Arginine Levulinate (and) Potassium Sorbate	1.00
GLB Horse Chestnut Extract AQ / Green Line	Water (and) Aesculus Hippocastanum (Horse Chestnut) Seed Extract (and) Arginine Levulinate (and) Potassium Sorbate	1.50
GLB Matcha & White Tea Extract Blend AQ / Green Line	Water (and) Camellia Sinensis Leaf Extract (and) Arginine Levulinate (and) Potassium Sorbate	3.00
GreenGard™ LA / Green Line	Water (and) Arginine Levulinate (and) Arginine Anisate	2.00
PHASE G		
Citric Acid (50% Aq Solution) / Stock	Citric Acid (and) Water	q/s
Sodium Hydroxide (25% Aq Solution) / Stock	Water (and) Sodium Hydroxide	q/s

Please note: The information provided on this formulation sheet is provided as guidance and subject to change. This formula is not intended to be a commercial product.

PROCESSING

- In a suitably-sized main kettle, weigh Phase A and begin propeller mixing while heating to 75-80C.
- Add Phase B ingredients to main kettle one at a time. Mix until uniform and continue heating.
- Slowly sift Phase C into the main kettle. Propeller mix until uniform and continue heating. If needed, homogenize to fully disperse and record time needed.
- When main kettle is uniform and at temperature, add Phase D and continue mixing to melt and disperse ingredient.
- In a side kettle, weigh Phase E ingredients. Propeller mix or homogenize until uniform.
- Slowly add Phase E to main kettle while continuing to propeller mix and maintain temperature. Mix at temperature for 3-5 minutes.
- Homogenize main kettle for 30 seconds-1 minute/100g final batch size.
- When main kettle is uniform, begin side-sweep mixing and cooling.
- When the temperature of the main kettle reached below 50C, add Phase F ingredients one at a time. Fully disperse each ingredient prior to adding the next.
- If needed, adjust the pH of the main kettle with the ingredients listed in Phase G. Record amounts used.
- When main kettle is uniform and in spec, drop at room temperature into appropriate containers.

FORMULA SPECIFICATIONS (at room temperature)

Appearance: Viscous cream, TMS

Color: White to off-white, TMS

Odor: None added, TMS

pH: 5.00

Viscosity: 84,830 cPs @ 50% Torque

DESCRIPTION:

Our Ocean Eyes Firming Eye Cream is the ultimate solution to combat signs of aging and fatigue around the delicate eye area. Formulated with Biofer™ Sugar Kelp, adding instant and sustained skin firming, and GreenWax™ GL MB, which enhances the viscosity and texture of the emulsion.

RECOMMENDED PACKAGING:

Pump Bottles

RECOMMENDATIONS:

Use Level:

1.0-3.0%

Applications:

Under-eye treatments

Anti-wrinkle serums

Firming body lotions

Neck and décolleté creams





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