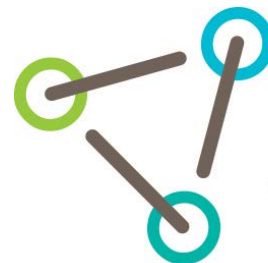




Marine Hydrolyzed Collagen LMW™

marine collagen oligopeptides



Ashland™
always solving

outline

Marine collagen oligopeptides.



Marine Hydrolyzed Collagen LMW™ biofunctional



- definition
- properties
- composition

definition

origin

Marine Hydrolyzed Collagen LMW contains collagen oligopeptides of marine origin.

positioning

Marine Hydrolyzed Collagen LMW is characterized by Low Molecular Weight (LMW) collagen fractions (mainly oligopeptides), endowed with a high capacity to interact with skin and hair.

scientific experiments

- may help increase Collagen I in human skin (*ex vivo*)
- may contribute to increase Collagen III in human skin (*ex vivo*)
- may help boost hyaluronic acid in human skin (*ex vivo*)

properties

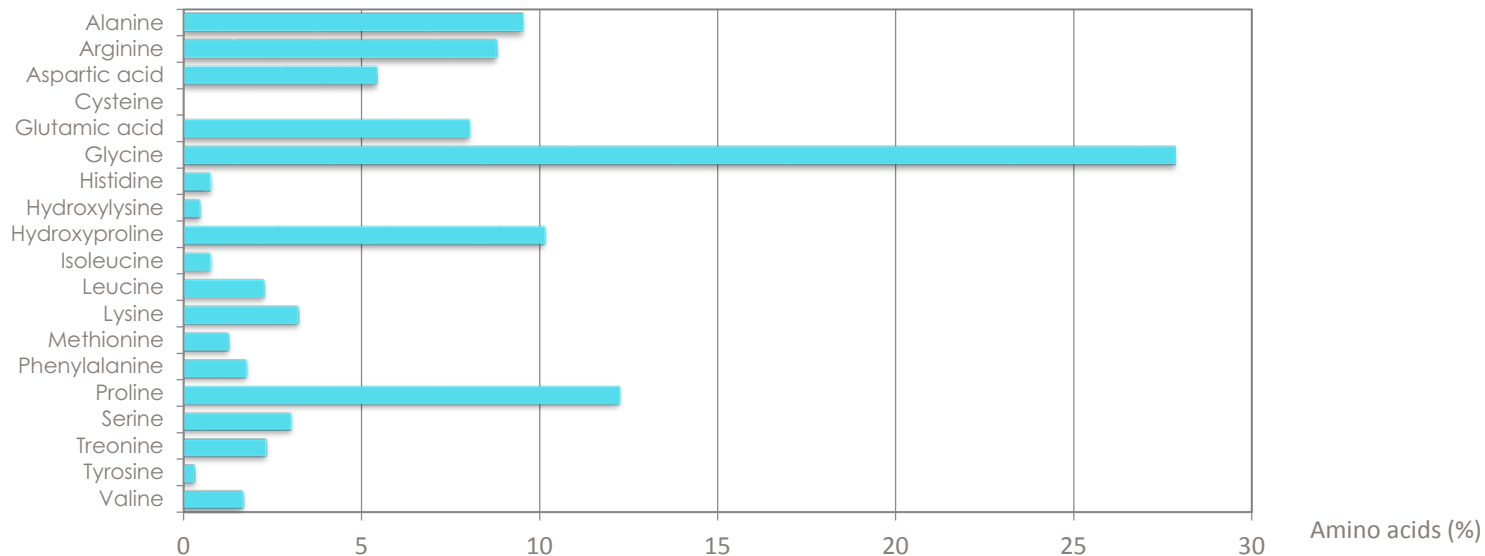
- the collagen oligopeptides are of **marine** origin
- Marine Hydrolyzed Collagen LMW collagen fractions primarily come from **type I collagen**
- low molecular weight collagen fractions with high level of **oligopeptides** (mainly 0.3 to 2 KDa)
- oligopeptides with high content in **essential amino-acids**
- easy to use: collagen fractions are in water solution

composition

Amino acids distribution

Marine Hydrolyzed Collagen LMW oligopeptides mainly originate from type I collagen. The amino acid composition is very similar to human skin collagen.

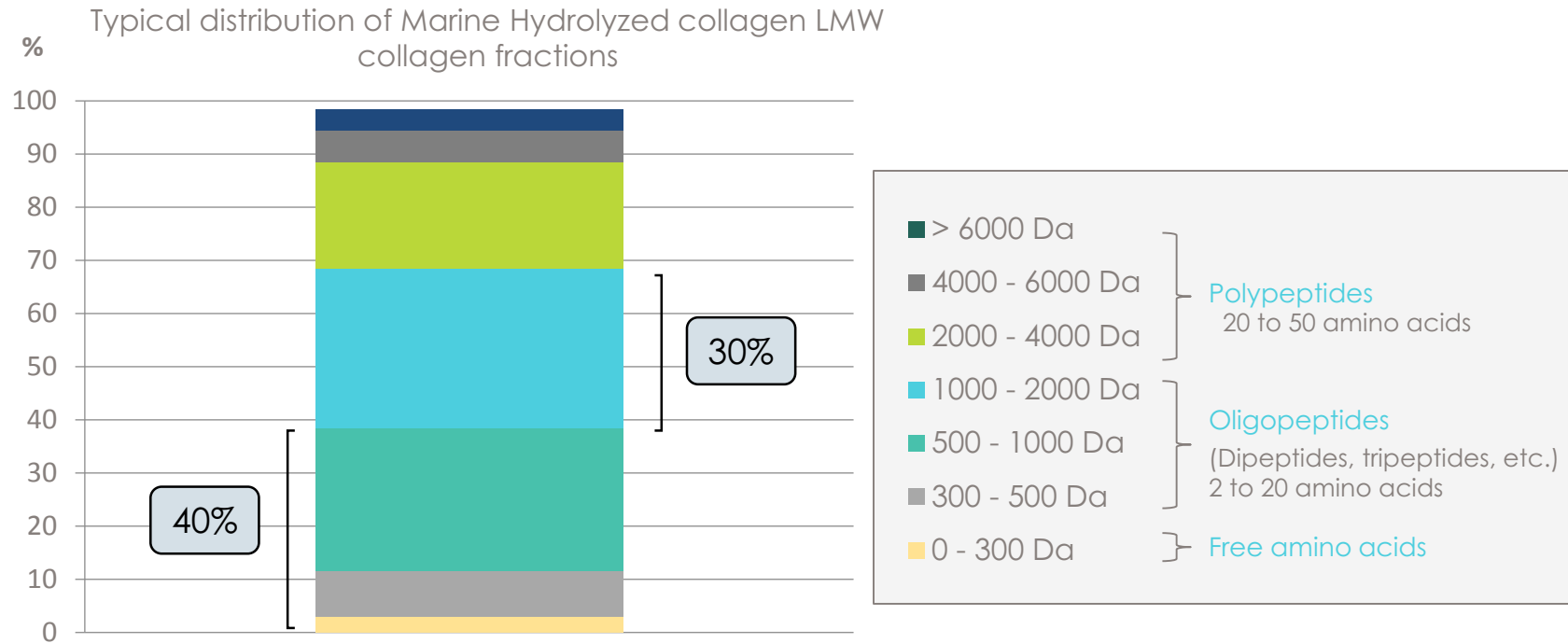
Amino acid distribution of Marine Hydrolyzed Collagen LMW



The major amino acids of collagen: Glycine, Proline and Hydroxyproline, represent 50% of the total composition. Marine Hydrolyzed Collagen LMW contains oligopeptides with essential amino acids.

composition

Molecular weight distribution



Very low molecular weight collagen fractions (<1000 Daltons) typically represent 40% of the total composition, and low molecular weight fractions (1000 - 2000 Daltons) represent 30% of Marine Hydrolyzed Collagen LMW.

Marine Hydrolyzed Collagen LMW™ biofunctional



- do you know?
- an amazing 3D organization
- what makes skin “plump”?

do you know?

- When the skin is young, it performs optimally. It appears smooth, firm, and evenly toned.
- As the effects of biological aging and environmental damage accumulate over time, the skin begins to thin.
- Scientists attribute this thinning to the loss of collagen within the dermis.

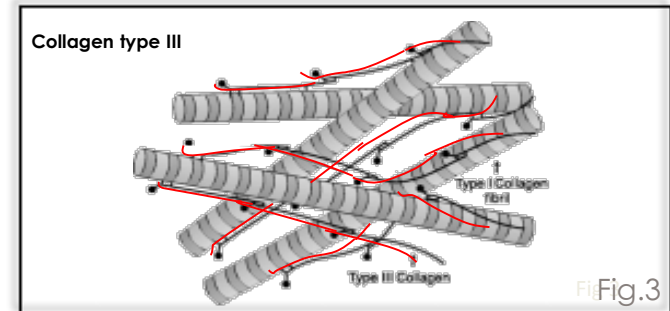
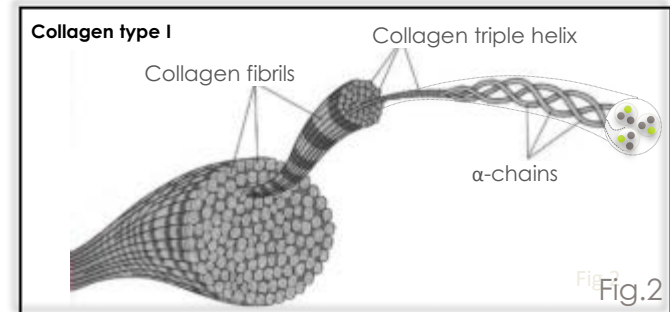
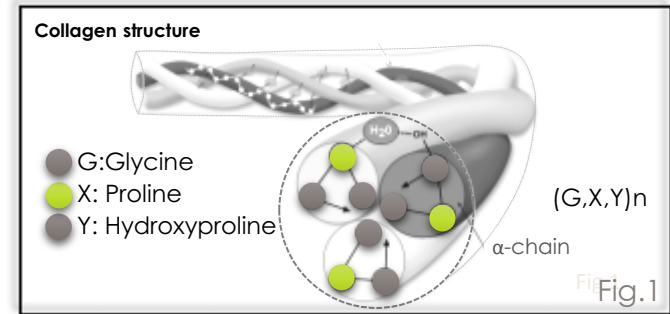
an amazing 3D organization

Collagens are triple helical proteins that have functions in tissue assembly and maintenance. (Fig 1)

The **fibril-forming collagens** is the class of collagens that provide tensile strength in skin:

- o **collagen type I** is the major protein in the dermis. It is arranged in fibers creating strength and resistance. (Fig 2)
- o **collagen type III** is commonly found alongside type I and plays an important role during skin repair. (Fig 3)

Reduced synthesis of collagen I and III is characteristic of chronologically aged skin.



what makes skin plump?

- Hyaluronic acid occurs naturally in the epidermis and the dermis.
- It helps to keep skin smooth and plump through its ability to hold up to 1 000 times its weight in water (fig 4).
- Hyaluronic acid also supports the formation and maintenance of collagen.
- An abundant network of hyaluronic acid and collagen fibers is what keeps skin firm and “plump”, free from wrinkles and fine lines.

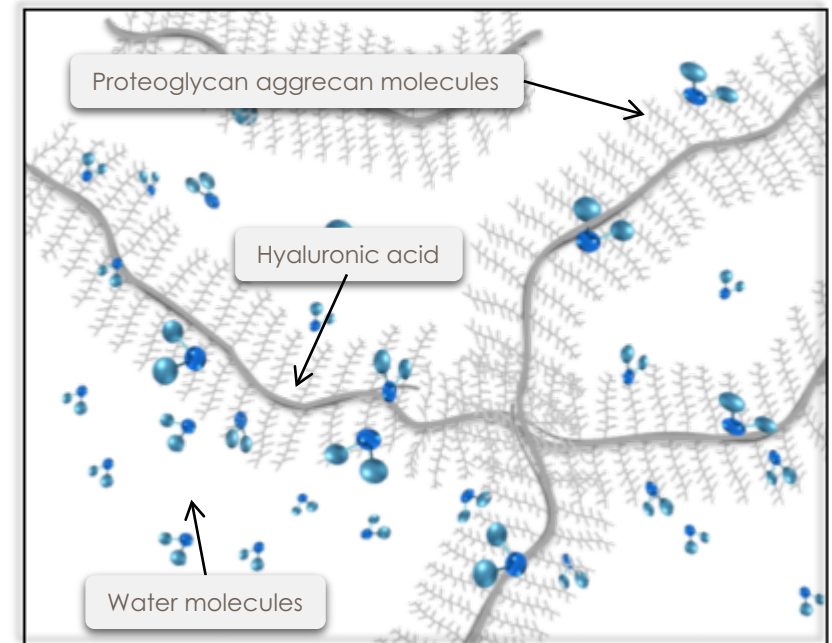


Fig.4

Marine Hydrolyzed Collagen LMW™ biofunctional



- collagen I
- collagen III
- hyaluronic acid

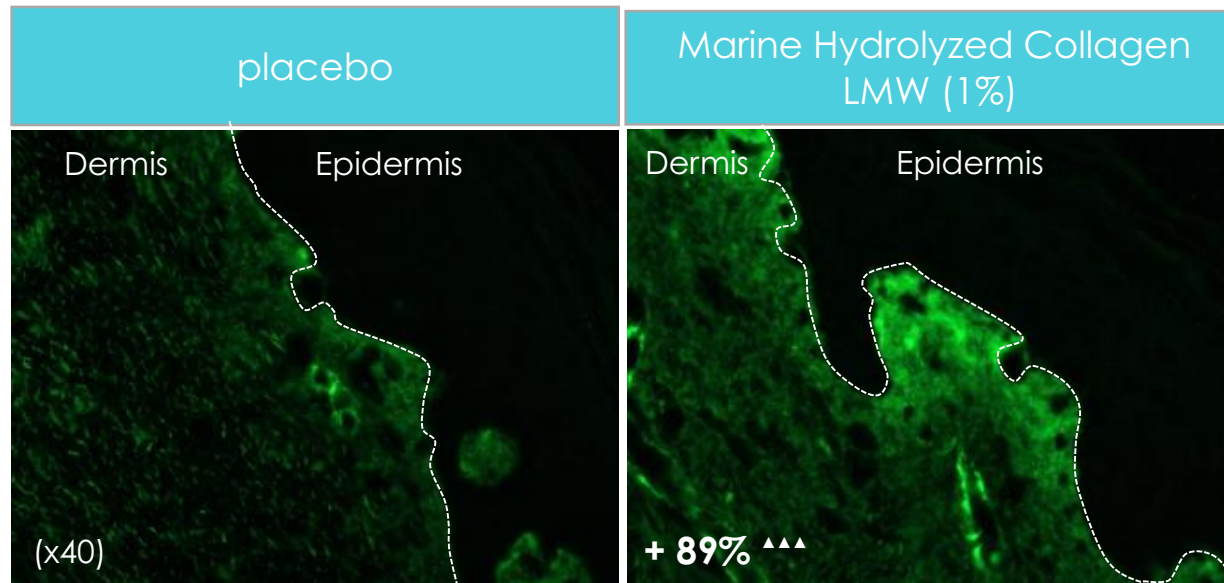
collagen I expression

culture: *ex vivo* human skin, female, 62 years old

product application: Marine Hydrolyzed Collagen LMW at 1% twice a day for 72 hours

evaluation: immunodetection of collagen I

quantification: image quantification by Volocity* software



(n=3, mean \pm sem, Student's *t*-test)

*** : highly significant

Skin treated with Marine Hydrolyzed Collagen LMW shows a more intense green staining intensity, suggesting an increased quantity of collagen I in the dermis of *ex vivo* human skin.

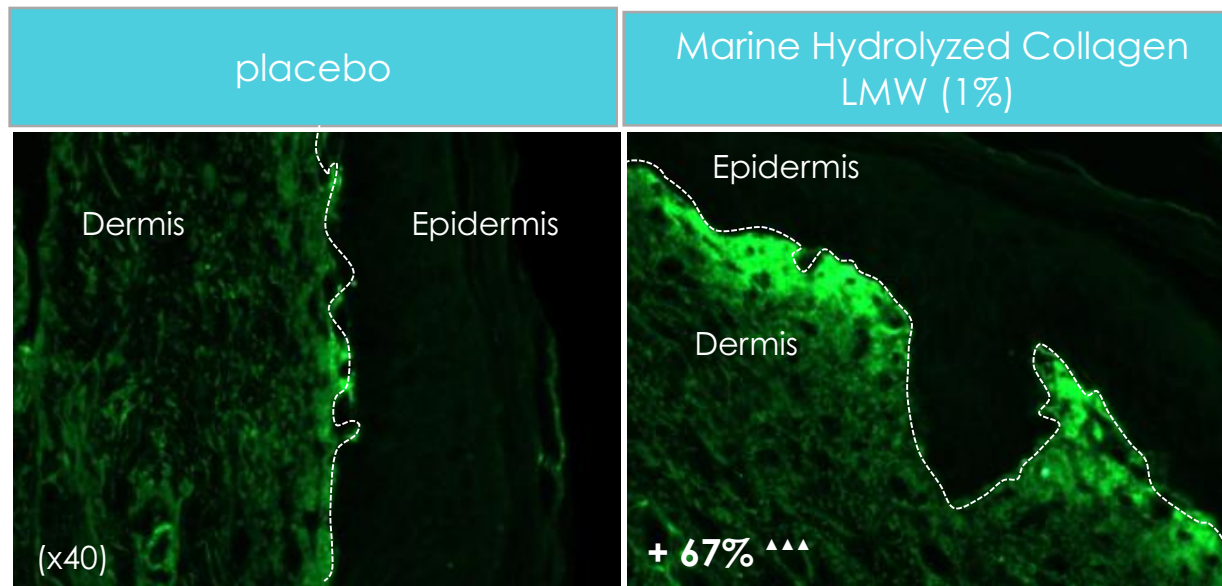
collagen III expression

culture: *ex vivo* human skin, female, 62 years old

product application: Marine Hydrolyzed Collagen LMW at 1% twice a day for 72 hours

evaluation: immunodetection of collagen III

quantification: image quantification by Volocity* software



(n=3, mean \pm -sem, Student's *t*-test)

*** : highly significant

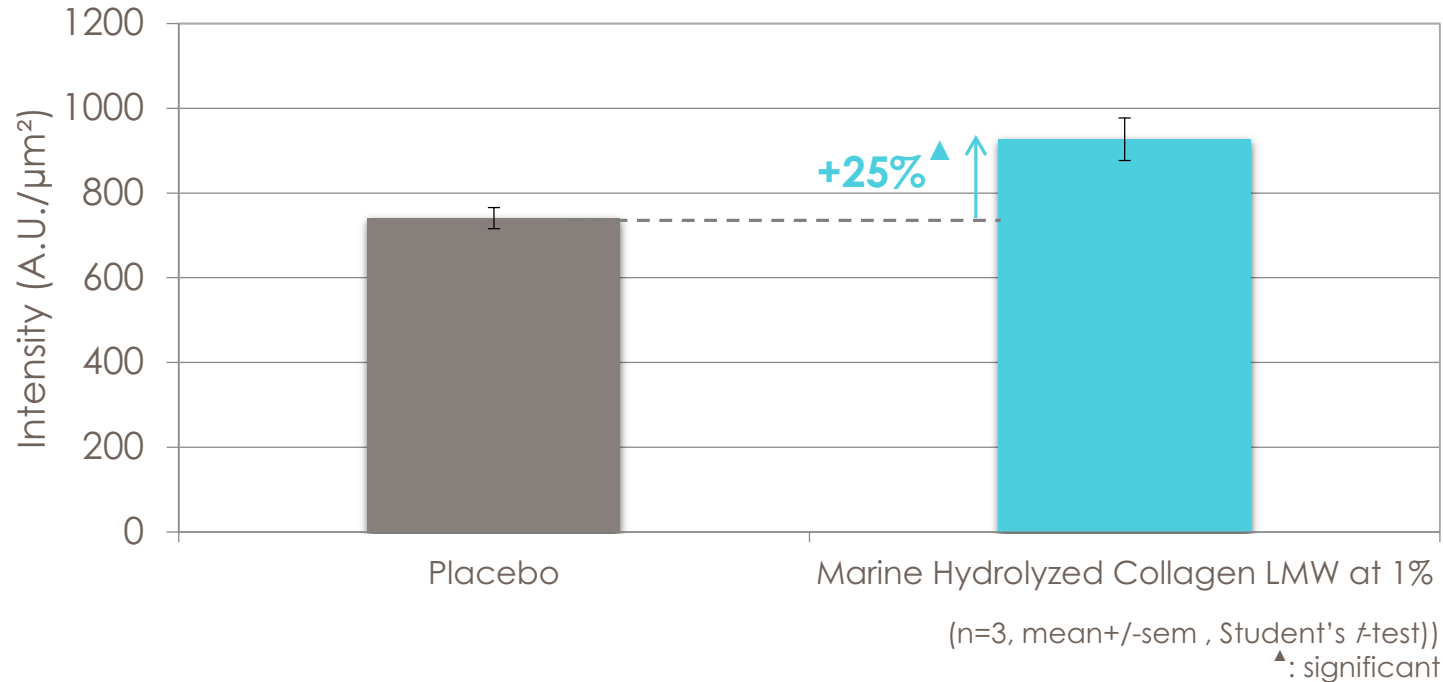
Skin treated with Marine Hydrolyzed Collagen LMW shows a more intense green staining intensity, suggesting an increased quantity of collagen III in the dermis of *ex vivo* human skin.

hyaluronic acid expression

culture: *ex vivo* human skin, female, 62 years old

product application: Marine Hydrolyzed Collagen LMW at 1% twice a day for 72 hours

evaluation: fluorescent staining **quantification:** image quantification by Volocity* software



Marine Hydrolyzed Collagen LMW may help increase the quantity of hyaluronic acid in *ex vivo* human skin.

Marine Hydrolyzed Collagen LMW™ biofunctional



- specifications
- cosmetic applications

specifications

- content in collagen oligopeptides, 100 g/kg
- content in Hydroxyproline, 10 g/kg
- preservative system: phenoxyethanol (0.85 %) and sodium benzoate (0.3%)

cosmetic applications

Marine Hydrolyzed Collagen LMW provides skin and hair with collagen amino acids and peptide fractions that contribute to maintaining a healthy look for a wide range of cosmetic formulations:

- regenerating and firming skin care products
- anti-wrinkle skin care products
- hydrating skin care products
- body care products
- hair care and conditioning products

Recommended use level: 1%

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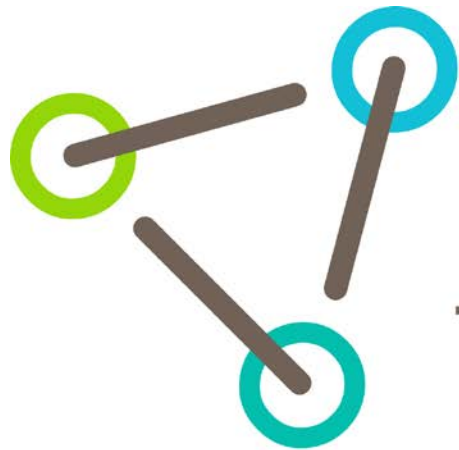
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