

# SEAGARDEN GROUP

A major producer of high quality marine ingredients

- The Seagarden Group is one of the world's major marine ingredients companies producing 100 % natural ingredients for use in savoury, nutritional and pharmaceutical applications as well as personal care and cosmetics.
- Seagarden uses only high quality marine raw materials in its production.
- Seagarden offers more than 50 unique ingredients used in thousands of food and cosmetic products around the world.
- The Company has three production sites along the Norwegian coast.

## OUR NUTRITION AND BEAUTY PRODUCTS:

- **Food applications:** soups, sauces, stocks, baby food, snacks.
- **Protein powder** from wild-caught cod is suitable for food applications, sport protein supplements, nutritional bars, soups and shakes.
- **Nutricoll Marine Collagen Peptide** from the skin of wild-caught cod is suitable for health, beauty and cosmetics.
- **Chitosan** derived from sustainable sources has outstanding properties for use in cosmetics, haircare and medical applications under the brands Hydamer™ and Chitopharm™.

## EXPERTISE AND DEVELOPMENT:

- Joint collaboration with respected research centres; the University of Bergen, Nofima (Food Research Institute), NTNU (Norwegian University of Science and Technology) and the Arctic University of Norway.
- We endeavour to contribute to R&D as well as improved documentation for marine products.
- Seagarden is involved in research projects supported by Innovation Norway and the Research Council of Norway.



## APPROVALS AND QUALITY CERTIFICATES:

- FSSC 22000 certified manufacturer of Natural Marine Ingredients
- Halal approved
- MSC approved raw materials - sustainable fishing
- Seagarden takes part in the Responsible Sourcing Audit program, SMETA 4 Pillars



100% NATURAL

NUTRICOLL

MARINE COLLAGEN PEPTIDE

From the North Atlantic Ocean



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# WHY ARE MARINE COLLAGEN PEPTIDES UNIQUE?

Collagen peptides, whether orally ingested or topically administered, have positive effects on human health and beauty. Human collagen is vital for the elasticity, flexibility and strength of skin, tendons and ligaments, but also of the cornea, cartilage, bones, blood vessels and gut.

Fish-derived collagen peptides are receiving more and more attention due to their favourable characteristics and fewer consumer reservations compared to mammal-derived ingredients. Collagen obtained from marine sources are of type 1, and is produced and organized in cells in skin and connective tissues as well as playing an important role in bone tissue. Type 1 is the most common types of collagen and is the main type in humans.

## STUDIES HAVE PROVEN THE IMPACT OF MARINE COLLAGEN PEPTIDES ON PERSONAL APPEARANCE AND THE MUSCULOSKELETAL SYSTEM

### 1. ANTI-AGING EFFECT ON HUMAN SKIN

Marine collagen hydrolysate has an anti-aging effect on human skin. A recent clinical trial demonstrated a significant increase in skin elasticity in a group of women aged 35-55 years (Proksch, Segger, et al., 2014).

### 2. REDUCING SKIN WRINKLES

The same group of scientists from the University of Kiel, Germany, also demonstrated a significant reduction in skin wrinkles after daily consumption of a collagen hydrolysate (Proksch, Schunck, et al., 2014).

### 3. INCREASING THE SKIN MOISTURE LEVEL

A comprehensive study of the effect of oral collagen peptide supplement on skin-aging involving clinical trials with Japanese and Caucasian women showed good effect on skin moisturisation. The fish collagen peptides were shown to increase the skin moisture level by 12 % in a period of 8 weeks. A consistent increase in the skin collagen density over 12 weeks was confirmed by increased dermal echogenicity. Ex vivo studies confirmed the results of the clinical trials and showed an increased amount of water-binding glycosaminoglycans and collagen content in human skin explants incubated with fish collagen peptides (Asserin et al., 2015).

### 4. PROTECTING HAIR AGAINST CHEMICAL DAMAGE

In a study with 62 human test subjects, fish-derived collagen peptides were shown to have a positive effect on the skin moisture content. The same study documented the transdermal penetration ability of those collagen peptides and show increased abilities for fish collagen peptides in the range of 3.5-4.5 k Da (Chai et al., 2010). In hair, the collagen peptides diffuse into the fibrous hair cells.

### 5. ADDED VALUE FOR THE MUSCULOSKELETAL SYSTEM

Products containing active collagen peptides have long been marketed in the US and European pharmaceutical and food markets. Many scientific and preclinical studies show various positive effects on tendon flexibility, ligament stability, muscle and bone integrity and bone metabolism. Another study investigated the effect of specific fish-derived collagen peptides on collagen expression, post-translational modification and mineralisation in an osteoblastic cell culture. Fish collagen peptides were shown to upregulate the gene expression of collagen-modifying enzymes and this effect led to an increased collagen synthesis and positive effects on collagen quality and matrix mineralisation in the osteoblasts (Yamada et al., 2013).



#### References:

- Asserin, J., Lati, E., Shioya, T., Prawitt, J. (2015) The effect of oral collagen peptide supplementation on skin moisture and the dermal collagen network: evidence from an ex vivo model and randomized placebo-controlled clinical trials. *Journal of Cosmetic Dermatology* 14(4), 291-301.
- Schrieber, R., Gareis, H. (2007) *Gelatine Handbook: Theory and Industrial Practice*. Wiley-VCH, Weinheim, 347 pp.
- Proksch, E., Schunck, M., Zague, V., Degwert, J., Oesser, S. (2014) Oral intake of specific bioactive collagen peptides reduces skin wrinkles and increases dermal matrix synthesis. *Skin Pharmacology and Physiology* 27(3), 113-119.
- Yamada, S., Nagaoka, H., Terajima, M., Tsuda, N., Hayashi, Y., & Yamauchi, M. (2013). Effects of fish collagen peptides on collagen post-translational modifications and mineralisation in an osteoblastic cell culture system. *Dental Materials Journal*, 32(1), 88-95.

# SEAGARDEN NUTRICOLL

100 % PURE NATURAL FISH COLLAGEN PEPTIDE FROM WILD COD

- Natural raw materials harvested from the crystal clear, cold waters of the North Atlantic Ocean
- Good and fast solubility
- Bio-available protein which is easily digestible
- Mild taste and smell
- Natural appearance
- Protein content more than 90 %
- Average molecule weight:  $\leq 3,000$  kD and  $\leq 6,000$  kD

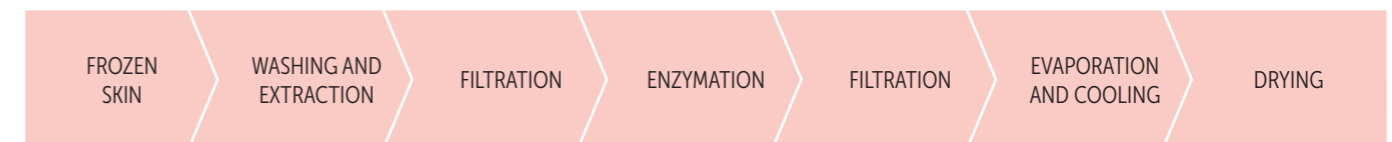
- PH 5.0 – 7.0
- Free from artificial additives and preservatives
- Low heavy metal content
- Product suitable for those who do not use collagen from traditional bovine and porcine sources



## COLLAGEN PRODUCTION PROCESS

Enzymatically treated and spray-dried into a granulated powder.

Produced according to EU regulations 852/2004, 853/2004 - with EU 2016/355 amending Annex III and 854/2004.



## MARINE COLLAGEN PEPTIDE WORKS WELL IN THE FOLLOWING PRODUCTS:

FOOD: «BEAUTY FROM WITHIN», SPECIAL NUTRITION AND FUNCTIONAL SPORT APPLICATIONS	APPLICATIONS FOR PHARMACEUTICAL PRODUCTS WITH FOCUS ON THE MUSCULOSKELETAL SYSTEM	FACIAL, BEAUTY AND HAIR APPLICATIONS	SPECIAL ANIMAL NUTRITION
Smoothies, juices, nutri-bars, soups, snacks, sport-shakes.	Smoothies, juices, nutri-bars, soups, snacks, sport-shakes.	Face masks, creams, serums and lotions. Hair balms, shampoos, conditioners.	Applications for fur, skin, bones and joints.

## SEAGARDEN PRODUCT LIST

THE PRODUCTS ARE AVAILABLE IN BULK OR IN VARIOUS PACKAGING: JARS, SACHETS OR CAPSULES

- NUTRICOLL - PURE MARINE COLLAGEN POWDER**  
100 % natural marine collagen.
- NUTRICOLL - MARINE COLLAGEN MIX 100% NATURAL INGREDIENTS**  
100 % natural collagen with a touch of natural flavourings and natural sweeteners.  
Flavours: *Strawberry+Rhubarb*.
- NUTRICOLL PRO MIX 100% NATURAL INGREDIENTS**  
Pure marine collagen and wild fish protein blend.  
Flavours: *Strawberry+Rhubarb and Coconut*.



Seagarden Branded Product Range