



A NEW BEGINNING  
FOR THE OMEGA-3  
MARKET



**SUPERBAKrill™**

› **Healthy** › **Clinically proven** › **Clean** › **Sustainable** › **Traceable**

BY  **AkerBioMarine™**



## What It Is

Superba™ Krill comes from *Euphausia superba*, an Antarctic krill species that contains long chain omega-3 fatty acids EPA & DHA, as well as phospholipids, choline and astaxanthin.



Antarctic krill  
*Euphausia superba*

## Krill Biomass

A species of zooplankton invertebrates, krill float in huge swarms in Antarctic waters and feed on microscopic algae. Krill are considered to be the largest marine biomass in the world.

## Eco-Harvesting®

Aker BioMarine developed this proprietary fishing technology to eliminate by-catch, limit environmental impact and maintain the nutritional integrity of the krill.



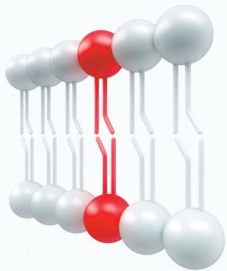
## Superba™ Krill Oil

The algae that provide krill's diet with such a robust source of omega-3s is also the source of the potent antioxidant astaxanthin, which gives Superba™ its distinctive red color and, more importantly, acts as a natural preservative to its fatty acids.



## Phospholipid Form = High Bio-Efficiency

Superba™ Krill's omega-3s are largely bound to phospholipids, which are responsible for carrying these fatty acids into the cells. Omega-3s bound to phospholipids experience better cellular uptake vs. other forms of omega-3s.



## Health Benefits

Powered by phospholipids, Superba™ Krill ensures the delivery of key omega-3 fatty acids to various parts of the human body, such as the brain, heart and joints.



## WHAT IT IS

Superba™ Krill contains long chain omega-3 fatty acids, phospholipids, choline and astaxanthin.

Superba™ Krill oil is extracted exclusively from *Euphausia superba*, an Antarctic krill species rich in the long chain omega-3 fatty acids EPA (eicosapentaenoic acid) and DHA (docosahexaenoic acid). A species of zooplankton invertebrates, krill move in huge swarms throughout pure Antarctic waters and feed on microscopic algae, which is what provides the diet with such a robust source of omega-3s.

Algae is also rich in astaxanthin, a potent antioxidant that gives Superba™ its distinctive red color and, more importantly, acts as a natural preservative to its omega-3 fatty acids. Recognized for its health-promoting suppression of free radicals, astaxanthin keeps Superba™ Krill fresh, protecting the omega-3 fatty acids from oxidation, which means no additives are necessary to maintain its long-term stability.

Superba™ Krill's long chain omega-3s are better recognized by the body because they are mostly attached to phospholipids, resulting in higher cellular incorporation. Powered by these phospholipids, Superba™ Krill ensures the delivery of the key fatty acids EPA and DHA to various parts of the human body, such as the brain, heart, eyes and joints.

Krill is an appealing source of omega-3s because its key fatty acids are more bio-efficient. The first and most noticeable benefit is smaller pills. The second benefit is the absence of reflux because krill's omega-3s actually mix with the stomach contents, avoiding reflux and other unpleasant digestive issues frequently associated with other marine sources of omega-3s (see Figure 1 below).

Phospholipids carry omega-3s EPA/DHA into the cells more efficiently

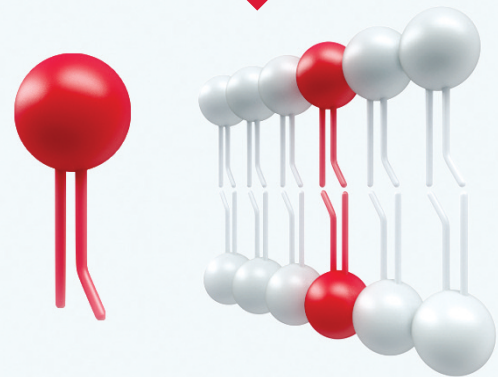


Figure 1

Superba™ Krill omega-3s are transported and integrated into cell membranes quicker and more efficiently because they are bound to phospholipids. As part of cell membranes, the omega-3 fatty acids EPA and DHA have the ability to influence fluidity, signaling processes, and metabolic parameters in the cell. In other words, the more omega-3s in your cells, the more flexible they are and the better they function. But it doesn't stop there; besides omega-3s, phospholipids and astaxanthin, Superba™ Krill also contains choline, a nutrient essential to liver, heart and cognitive function (see Table 1 below).

including ibuprofen, calcium, vitamin D and Lipitor.® But even with more than 30,000 published papers, the accelerating research rate indicates we are still at the beginning of understanding the value of omega-3s in human health, according to GOED's Executive Director, Adam Ismail (see Figure 2 below).

Superba™ Krill is naturally rich in essential nutrients	
KRILL COMPONENTS	CHARACTERISTICS
<b>LONG CHAIN OMEGA-3 FATTY ACIDS (EPA &amp; DHA)</b>	<ul style="list-style-type: none"> <li>• A particular class of fatty acids that are found in fat and membranes or are used as energy</li> <li>• Recognized health benefits documented in more than 30,000 publications</li> <li>• Essential nutrients that benefit the heart, joints, brain, skin and eyes</li> </ul>
<b>PHOSPHOLIPIDS</b>	<ul style="list-style-type: none"> <li>• A lipid consisting of a phosphate and glycerol group and two fatty acids</li> <li>• The best delivery form for EPA &amp; DHA</li> <li>• Represent the building blocks of all cell membranes</li> </ul>
<b>CHOLINE</b>	<ul style="list-style-type: none"> <li>• An essential nutrient</li> <li>• A biochemical building block important for liver, heart and cognitive health</li> </ul>
<b>ASTAXANTHIN</b>	<ul style="list-style-type: none"> <li>• A carotenoid with potent antioxidant properties</li> <li>• Protects the omega-3 fatty acids in krill oil from oxidation, keeping them naturally fresh and stable over time - i.e., a natural preservative</li> </ul>

Table 1

**HEALTH BENEFITS OF LONG CHAIN OMEGA-3s**

Long chain omega-3s EPA & DHA are considered to be among the most important nutrients for improving public health globally.

According to the Global Organization for EPA/DHA Omega-3s (GOED), omega-3s are among the most researched nutrients in the world. In fact, there are more studies on omega-3s than almost any other substance,

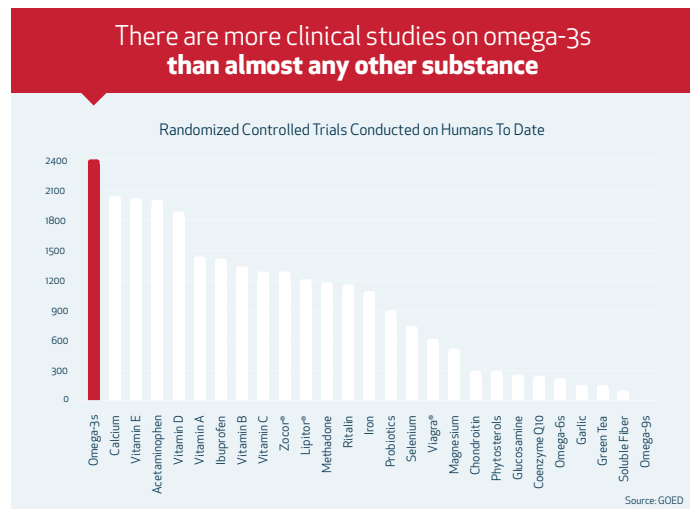


Figure 2

The typical Western diet contains inadequate amounts of omega-3 fatty acids and choline, contributing to about 90% of the American population being deficient in these nutrients. Both omega-3 fatty acid and phospholipid deficiencies are linked to damaged cell structure and decreased fluidity, which can result in cell dysfunction. Cellular dysfunction has been linked to health conditions of the heart, brain, liver, joints, etc. Omega-3 deficiency is purported to contribute to diseases that are rooted in inflammation, such as heart disease, Alzheimer's/dementia and arthritis. Omega-3s by design are anti-inflammatory, so the connection between dietary lack of these nutrients and the rising incidence of these diseases makes sense (see Figure 3 below).

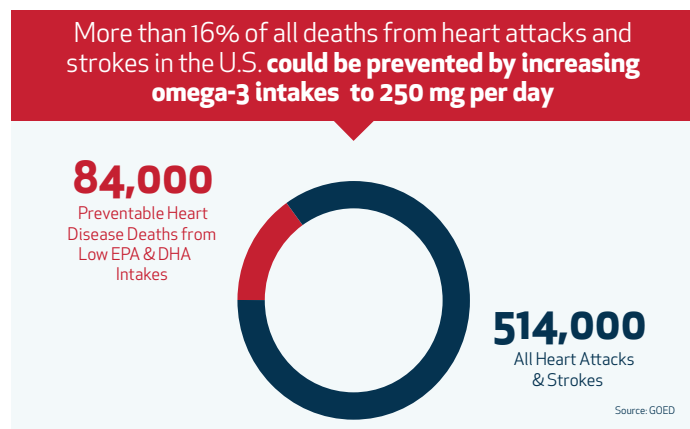


Figure 3

## SUPERBA™ IS CLINICALLY PROVEN

*Aker BioMarine is the largest contributor to the scientific investigation of krill and its health properties.*

Superba™ Krill is backed by a growing evidence base. In fact, the majority of clinical trials conducted on krill during the last several years have featured Superba™ Krill. Two of these human intervention studies investigated if the molecular form (phospholipid vs. triglyceride) of omega-3 fatty acids is of importance for the uptake of EPA and DHA in blood plasma.

In one study, participants started out with an average Omega-3 Index of 2.0, a relatively low value. After 8 weeks of daily supplementation with 2 grams of Superba™ Krill, the average index went up to 4.5, an increase of 125%. In fact, an increase of 45% in the Omega-3 Index was seen after just 2 weeks. These observations show that the phospholipid omega-3s from Superba™ Krill are taken up from the gut to the blood stream and that EPA and DHA are incorporated into the cells.

In another published study, researchers also investigated Superba™ Krill's ability to lower triglycerides without raising LDL (the "bad" cholesterol) in those who have borderline high or high triglyceride levels.

Three hundred subjects participated in this randomized, double-blind, placebo-controlled, multi-center U.S. study. The five treatment groups included a placebo group (olive oil), as well as 4 groups taking 0.5, 1, 2 and 4 grams of krill oil daily.

This study showed a triglyceride-lowering effect—without impacting LDL levels. Study authors concluded from their findings that Superba™ Krill oil is effective in reducing cardiovascular risk factors important in the treatment of dyslipidemia.

Aker BioMarine has performed more clinical work on krill than any other company, making Superba™ the most researched krill brand on the market. In addition to several heart-related studies, some of the recent investigation areas include brain health, sports nutrition and skin health. All of these studies show great promise of Superba™ Krill's effectiveness beyond heart health.

## USING THE OMEGA-3 INDEX AS A HEALTH TOOL

*Millions of Omega-3 Index tests have been used to manage patients' heart disease risk.*

There are more than 150 published papers using or referencing the Omega-3 Index, a diagnostic tool that is quickly becoming more popular with medical professionals and consumers.

In fact, millions of Omega-3 Index tests have been used by physicians to help manage heart disease risk for their patients. And as the Omega-3 Index starts playing a more central role in routine clinical care, patients and their physicians can focus on bringing the index up to the optimal 8% target by increasing their intake of oily fish and/or taking omega-3 supplements (see Figure 4 below).

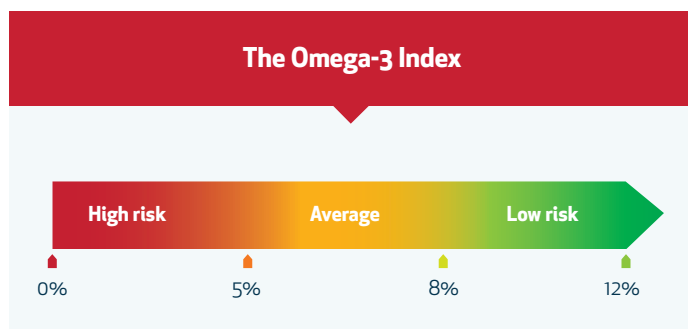


Figure 4

In addition to helping assess an individual's cardiovascular health, the Omega-3 Index offers additional insight into a person's general state of well-being based on the amount of omega-3s EPA and DHA in their blood. While most long chain omega-3s will raise the Omega-3 Index, how quickly and efficiently that happens depends on the source.

Superba™ Krill's omega-3s address many health areas, such as heart, brain and eye health. The body better utilizes krill's omega-3s because they are mostly bound to phospholipids, which are responsible for carrying these fatty acids into the blood and throughout the body. In studies, Superba™ Krill has been shown to increase the Omega-3 Index faster and more efficiently compared to other marine and algal sources.





## SUPERBA™ IS A PURE, SAFE SOURCE OF VALUABLE NUTRIENTS

Considered a whole food extract, Superba™ Krill oil is environmentally clean in its original form.

Antarctic krill are so low in the marine food chain and live in the cleanest waters on Earth that they are naturally low in contaminants. These factors together make krill a truly superior source of nutrition for their natural predators as well as for humans.

Superba™ Krill oil is unique in the marine omega-3 world due to the significantly fewer processing steps needed to create the final product. Relative to other marine omega-3 sources, krill oil is considered a whole food extract. Furthermore, the immediate on-board processing of Superba™ Krill prevents decomposition and degradation, which protects the nutritional integrity of the product (see Figure 5 below).

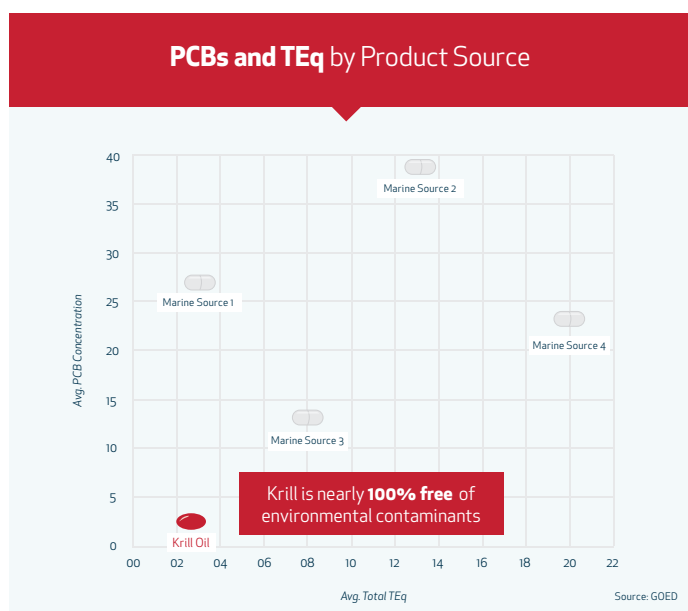


Figure 5

The stability of products rich in omega-3s and the susceptibility to oxidation are well known challenges to those working with marine-sourced fatty acids. Superba™ has two great advantages over traditional long-chain omega-3 products — its high content of omega-3 phospholipids and the naturally occurring antioxidant astaxanthin.

Scientific studies have shown that omega-3 fatty acids bound to phospholipids are far less prone to oxidation than omega-3 fatty acids in traditional triglyceride form. The powerful antioxidant astaxanthin also provides additional protection to the omega-3 fatty acids and prolongs product shelf-life.

Astaxanthin inhibits fatty acid oxidation and thereby secures a stable lipid product within the capsule — think of it as krill's natural preservative.

Currently there are no known toxicity levels for krill oil. Antarctic krill live in a naturally clean environment, virtually devoid of pollution, so there's significantly less risk of heavy metals contamination. Furthermore, Superba™ Krill has undergone extensive in vitro, in vivo and human studies to determine its safety and lack of toxicity.

In a published human study with 76 men and women, 4 weeks of krill supplementation increased plasma EPA and DHA and was well tolerated, with no indication of adverse effects on safety parameters. However, people with known allergies to crustaceans (e.g., shrimp, crab, lobster, etc.) should not use krill products.

## SUSTAINABILITY & TRACEABILITY

*“When consumers are mindful of a product’s impact in the areas of health and sustainability 58% are more likely to try your products or services and 53% are more likely to buy your products repeatedly.”*  
—NMI’s Sustainability in America 2015: Trend & Opportunities Report

Sustainability has been at the core of Aker BioMarine’s mission since its inception. Given the importance of krill as a keystone species in Antarctica, the company’s commitment to ensuring its future and the future of the animals that depend on krill as a primary food source is paramount.

In fact, a 2015 report from the Sustainable Fisheries Partnership (SFP) showed that the only omega-3 source in “Very Good” condition comes exclusively from Aker BioMarine’s Antarctic krill fishery, earning it an “A” rating.

As part of the SFP’s mission to assess and improve the needs of sustainability among omega-3 suppliers, the organization analyzed data from 24 stocks of 13 species (divided by fish and crustaceans) and focused solely on the stocks used for fishmeal and fish oil - also referred to as “reduction fisheries.” The fisheries were ranked into four sustainability categories: A-very well managed fisheries, B1-reasonably well managed fisheries, B2-reasonably managed fisheries, and C-poorly managed fisheries (see Figure 6 on next page).

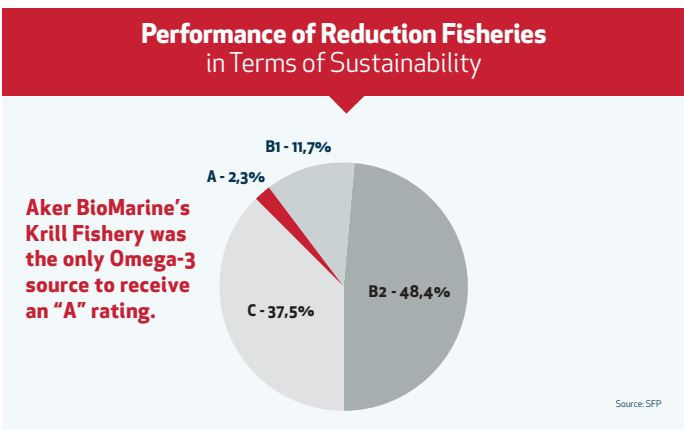


Figure 6

This "A" rating from SFP is significant for the krill fishery because it represents independent verification that it's sustainably managed. Since the marine omega-3s used in dietary supplements most frequently come from reduction fisheries, they require close attention because the species used represent a vital part of the food chain. For this and many other reasons, an omega-3 company simply cannot do business today without taking the appropriate environmental steps to ensure these species and their predators are well protected.

Aker BioMarine achieved another milestone in early 2015 when it was re-certified by the Marine Stewardship Council (MSC) for the sustainability and 100% traceability of its products. Aker's recertification was renewed without any objection, no conditions and with very high scores.

Comprehensive interviews were carried out as part of the reassessment process, complemented by a full and thorough review of relevant literature and data sources. Key stakeholders in the fishery - including skippers, scientists, fishery

protection officers, NGOs (non-government organizations), fishery managers and technical support staff - were crucial to the development of this report. Some of the specific stakeholders included WWF-Norway and the British Antarctic Survey.

Also in 2015, Aker BioMarine achieved Non-GMO Project Verification. Currently, Superba™ is the only krill oil brand that has obtained Non-GMO Project Verification, and one of few omega-3 players to receive this approval. According to *Nutrition Business Journal*, "Non-GMO Project Verified" products grew 99% in sales in 2013, far outpacing organic and GMO products, which grew 12% and 2%, respectively. Non-GMO Project Verification adds another layer of traceability and ensures that all components used to make Superba™ contain no genetically modified organisms (GMOs).

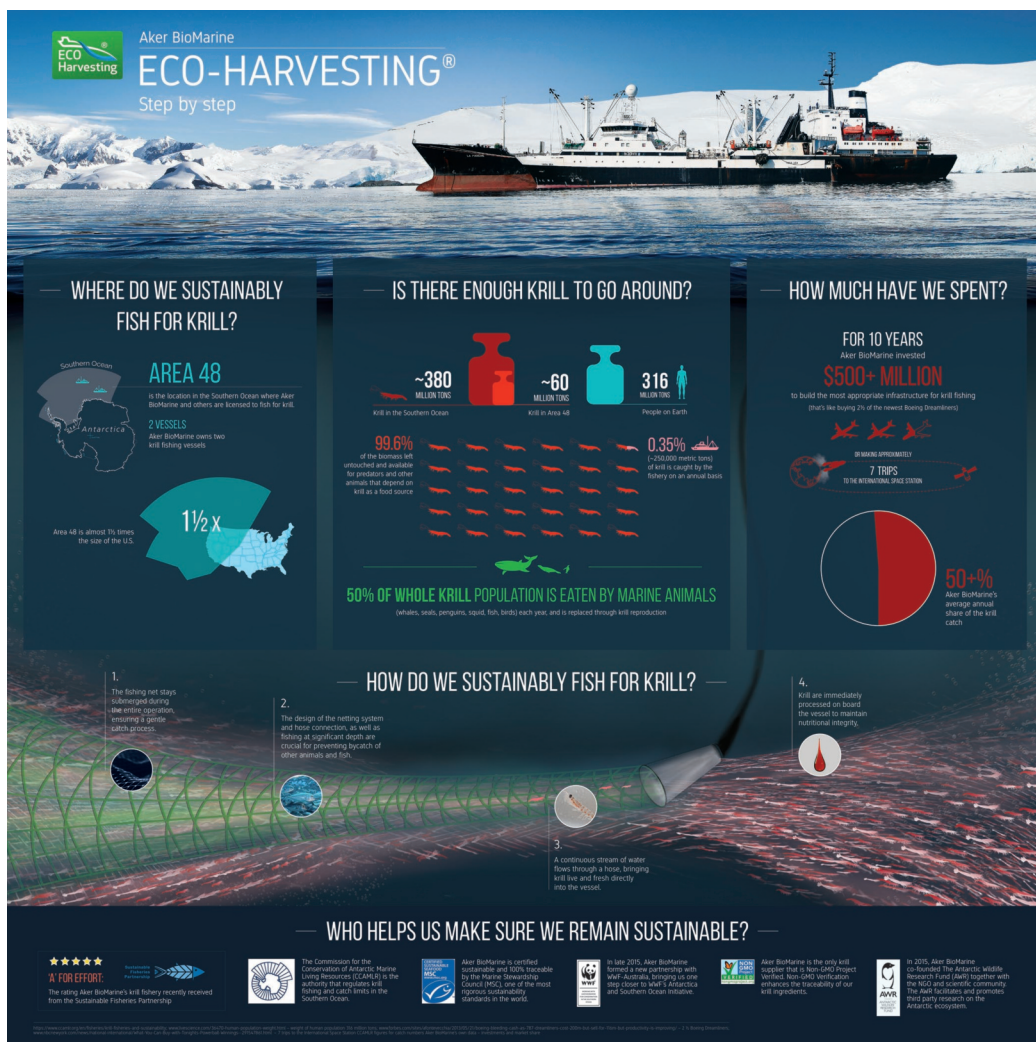


Figure 7



In terms of krill fishing itself, Aker BioMarine continues to lead the way in setting the highest possible standards for operation. One of the company's most significant achievements is its proprietary Eco-Harvesting® technology, which is based on more than a decade of krill fishing experience.

This technology, using a unique trawl system and direct hose connection between the trawl and the vessel, holds a special mechanism that singles out unwanted by-catch (non-krill species) and releases it unharmed. The gentle catch process also helps preserve the nutritional integrity of the product and limit environmental impact (see Figure 7).

### **SUPERBA™ WILL BREATHE NEW LIFE INTO THE OMEGA-3 MARKET**

*Armed with exclusive technology, Aker BioMarine will bring more innovation to the market with the ability to offer customized krill oil products.*

The omega-3 market, once thriving and bustling, has seen lackluster sales over the past several years mostly as a result of category maturation and negative media. Thankfully, many analysts predict a return to growth for this market in the coming years. Aker BioMarine will be at the forefront of this growth with new technology and innovations to keep the market moving forward.

The catalyst for this re-birth will be Flexitech™, a patented technology platform used exclusively by Aker BioMarine to create better krill oil products that are more appealing to brand owners, encapsulators, formulators and consumers. Its versatility allows producers to up-concentrate krill oil's various beneficial components, such as phospholipids and omega-3s. It also allows for the removal of salts in krill oil, which can lead to off odors and taste. Put simply, the product possibilities are endless.



Concentrated nature

Superba™ Krill represents a new generation of Omega-3s

 SUPERBA Krill™



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Superba™ Krill oil is protected by US Patent nos. 8,278,351; 8,383,675; 9,072,752; 9,320,765; 9,375,453; 9,644,169 and 9,644,170, with others pending.

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