

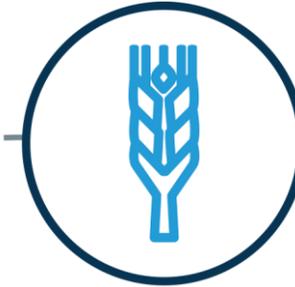


# Introducing an unique marine resource to India – Aker BioMarine in India

Bergen - 15th March

# 33 years down the road....

**9.7**  
Billion people



**69%**  
Increase in food  
production

BY  
**2050**

**2**  
Yearly  
consumption  
of planets\*



**22.2**  
USD trillion  
healthcare cost –  
lifestyle diseases\*

\* by 2030  
UN DESA report: "World Population Prospects: The 2015 Revision"  
The Global Footprint Network: "World Footprint 2015"  
SINTEF: "Marine ressursur – et kjempepotensial for Norge" 14.april 2015

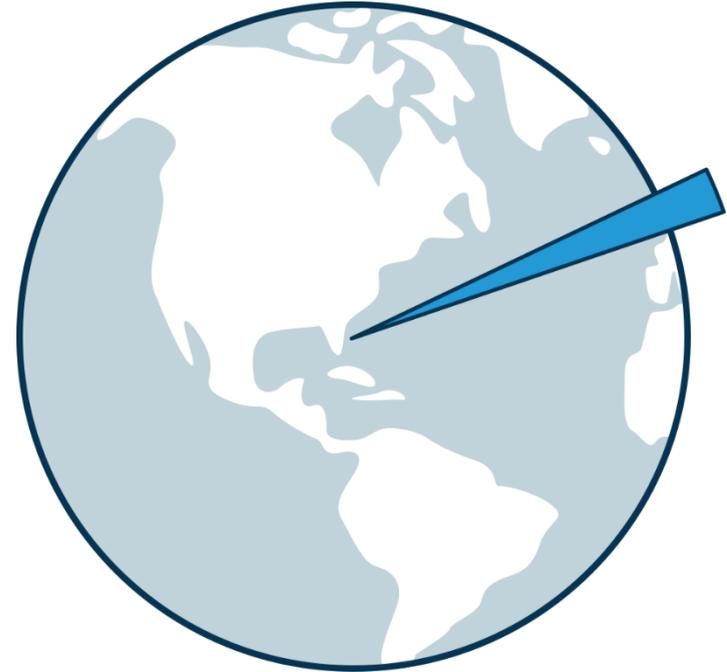
## We have to look to the oceans for solutions

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**70%** of the planet  
is covered  
by oceans



**2%** of food  
consumption  
from oceans



And that is exactly what we are doing at Aker BioMarine

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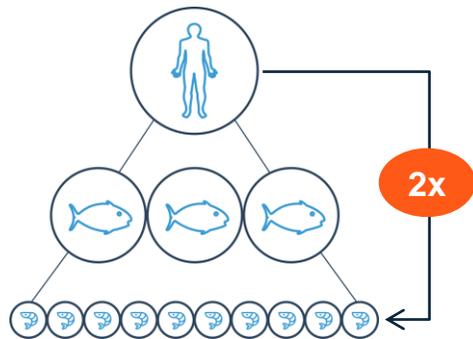
*Improving human and  
planetary health*



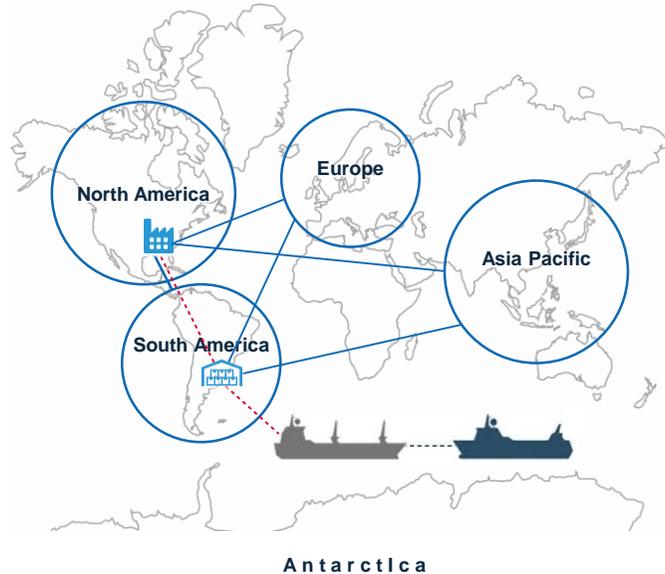
**AkerBioMarine™**

# Aker BioMarine is the global leader in krill harvesting and product development

Sustainable harvesting of the earth's largest biomass



Global supply chain from Antarctica to the consumer

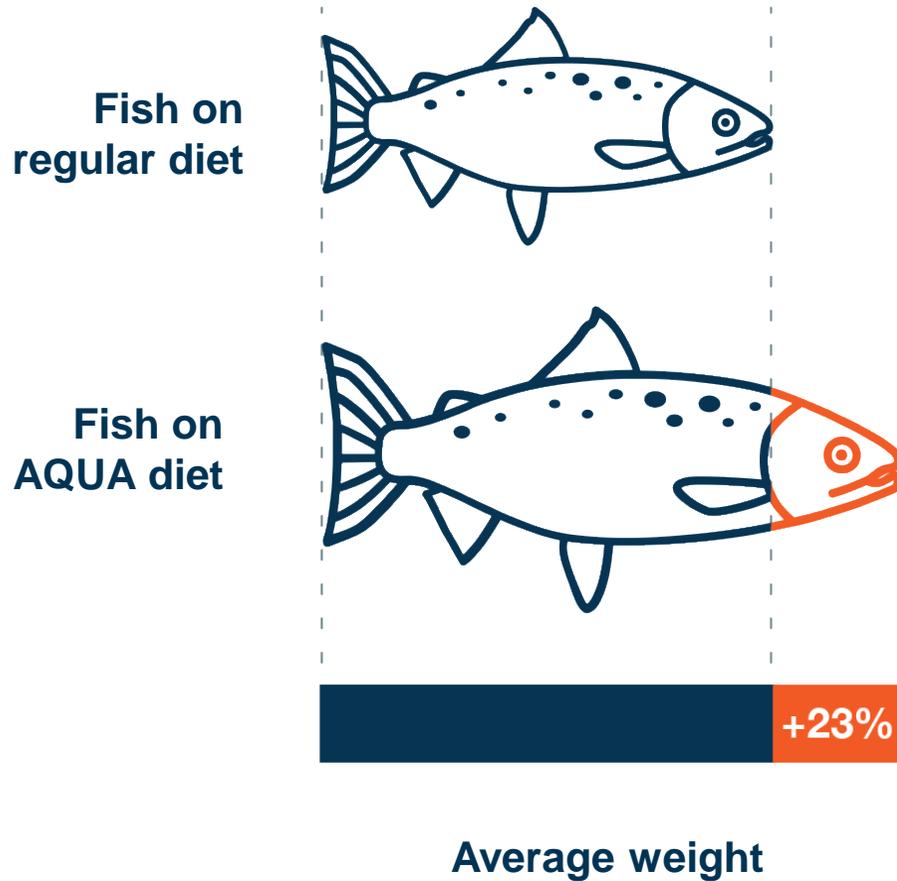


Revenue main products





With our Aquaculture product we help provide more healthy food to the world



**150**  
**MILLION**  
**EXTRA**  
**MEALS**





# With our human nutritional supplement product we reduce combat lifestyle diseases



**9000** PUBLISHED PAPERS ON PREVENTIVE EFFECTS

Spent **\$1** = **\$2.3** Saved\*



\*Avoided CVD-attributed cost spent on Omega-3

# We wanted to do everything right from the beginning when we first decided to start fishing krill

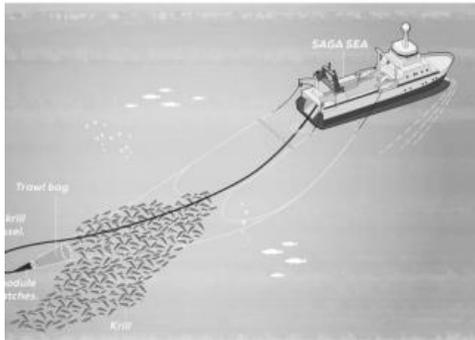
## OUR JOURNEY TOWARDS SUSTAINABLE OPERATIONS



# We believe in being a vertically integrated operation to have the best possible control over the quality of our products

We control the harvesting, processing and extraction processes for Krill products

Eco-Harvesting™



On-board Processing



On-Board Lab and QC



On-board Packaging



Offload by our tramper vessel



Onshore manufacturing site



Supply chain all the way to our customers



# Krill is very rich in...

## Omega-3 fatty acids

- A particular class of fatty acids that are found in fat and membranes or are used as energy
- Recognized health benefits documented in more than 30,000 publications
- Essential nutrients that benefit the heart, joints, brain, skin and eyes

## Phospho-lipids

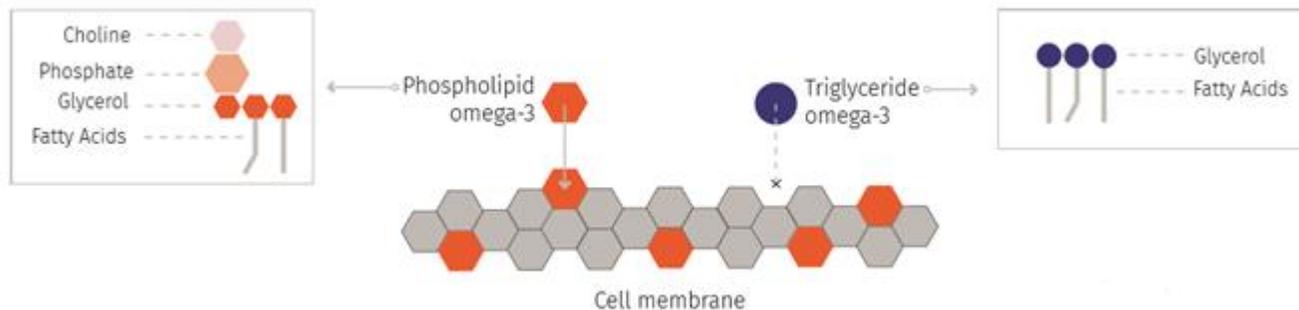
- A lipid consisting of a phosphate and glycerol group and two fatty acids
- The best delivery form for EPA & DHA
- Represent the building blocks of all cell membranes

## Asta-xanthin

- A carotenoid with potent antioxidant properties
- A natural preservative which protects the omega-3 fatty acids from oxidation

## Choline

- An essential nutrient
- A biochemical building block important for liver, heart and cognitive health



# Our krill ingredient and its biological effects have been broadly researched and documented over the years



**AkerBioMarine**

**Benefits for Fish Farming**  
Research and documentation

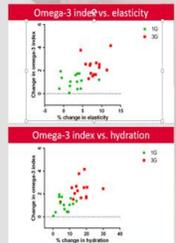


**AkerBioMarine**

**QRILL AQUA**

**Benefits for Shrimp Farming**  
Research and documentation

### Aker BioMarine has demonstrated clinically that dietary krill oil supplementation has a beneficial effect on hydration and elasticity of skin



- Healthy volunteers 1 or 3g/day Superba krill oil capsules
- Significant changes for elasticity, hydration, trans-epidermal water loss and roughness both within each dosage group and between the two dosage groups
- Significant within group changes also for skin 3g/day group
- The changes were with an increase
- Not unlikely the effects can be seen after administration

### Metabolic Effects of Krill Oil are Essentially Similar to Fish Oil but at Lower Dose of EPA and DHA, in Healthy Volunteers

Silke M. Ulven · Bente Kirkham · Annemarie Lamplait · Samar Rana · Elisabeth Elstad · Trond Haider · Kjell Berg · Hanne Vik · Jan I. Pedersen

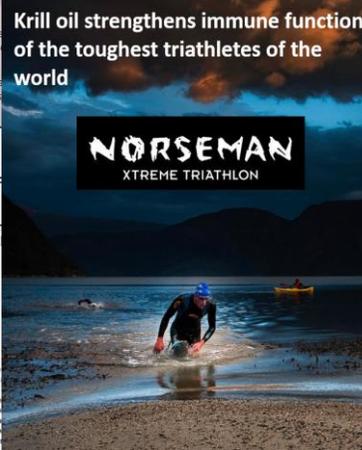
Received: 7 July 2010/Accepted: 9 October 2010  
© The Author(s) 2010. This article is published with open access at Springerlink.com

**Abstract** The purpose of the present study is to investigate the effects of krill oil and fish oil on serum lipids and markers of oxidative stress and inflammation and to evaluate if different molecular forms, steryl glycosylated and phospholipid, of omega-3 polyunsaturated fatty acids (PUFAs) influence the plasma level of EPA and DHA differently. One hundred thirteen subjects with normal or slightly elevated total blood cholesterol and/or triglyceride levels were randomized into three groups and given either six capsules of krill oil (N = 36; 3.0 g/day, EPA + DHA = 543 mg) or three capsules of fish oil (N = 48; 1.8 g/day, EPA + DHA = 543 mg) or a control (N = 29). A krill oil and fish oil that represent comparable dietary sources of n-3 PUFAs, even if the EPA + DHA dose in the krill oil was 62.8% of that in the fish oil.

**Keywords** Plasma lipoproteins · Plasma lipids · Dietary fat · Nutrition, n-3 fatty acids · Lipid absorption · Phospholipids

**Abbreviations**  
EPA Eicosapentaenoic acid  
DHA Docosahexaenoic acid  
FA Fatty acid  
PL Phospholipid  
PEFA Polyunsaturated fatty acid  
TG Triglycerides

### Krill oil strengthens immune function of the toughest triathletes of the world



**NORSEMAN XTREME TRIATHLON**

Available online at [www.sciencedirect.com](http://www.sciencedirect.com)

ScienceDirect  
Nutrition Research

### The Effect of Krill Oil Supplementation on Exercise Performance and Markers of Immune Function

Marcus De Sa<sup>a</sup>, Ina Møller, Gode Braathen, Hal McGovern, Keith Thompson, Stuart Robert Gray<sup>a</sup>

**Abstract**

**Background** Krill oil is a rich source of the long-chain n-3 polyunsaturated fatty acids (PUFAs), eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA), which may alter immune function after exercise. The aim of the study was to determine the effects of krill oil supplementation on lipid exercise immune function and performance.

**Methods** Nineteen males and 18 females (age: 25.8 ± 5.3 years; mean ± S.D.) were randomly assigned to 7 g/day of krill oil (n = 18) or placebo (n = 19) randomization for 6 weeks. A maximal incremental exercise test and cycling time trial (time to complete set amount of work) were performed pre-supplementation with the time trial repeated post-supplementations. Blood samples collected pre- and post-supplementation of week, and immediately, 1 and 3h post-exercise. Plasma E, 6 and triiodothyronine acid reactive substances (TIRAS) concentrations and erythrocyte fatty acid composition were measured. Interleukin (IL) cell cytokines: activity and peripheral blood mononuclear cell (PBMC) IL-6, IL-8, IL-10, IL-17 and IFN $\gamma$  production were also measured.

**Results** No effects of gender were noted for any variable. PBMC IL-6 and NK cell cytokine activity were greater (P < 0.05) 3h post-exercise in the krill oil compared to the control group. Plasma E, 6 and TIRAS, PBMC IL-6, IL-10, IL-17 and IFN $\gamma$  production, along with performance and physiological measures during exercise, were not different between groups.

### Omega-3 polyunsaturated fatty acids supplementation increases plasma concentrations of arachidonic and docosahexaenoic acids in overweight and obese men and women

Shige S. Koyama<sup>a,b</sup>, Mikiko Furumori<sup>a</sup>, Mikko Grönroos<sup>a</sup>, Kjetil Berge<sup>a</sup>, Hanne Vik<sup>a</sup>, Rachel Hubacher<sup>a,b</sup>, Tia M. Rains<sup>a,b</sup>

**Abstract** Omega-3 polyunsaturated fatty acids (PUFAs) supplementation increases plasma concentrations of EPA and DHA, without adversely affecting indicators of lipoprotein metabolism. In this randomized, double-blind parallel arm and obese men and women (N = 76) were randomly assigned to receive double-blind treatment 2 g/d of krill oil, emulsion oil, or control oil for 8 weeks. Results showed that plasma EPA and DHA concentrations increased significantly more (P < .001) in the krill oil (7.4 ± 1.8 and 10.2 ± 4.0 μmol/L, respectively) and emulsion oil (5.1 ± 2.8 and 6.9 ± 3.4 μmol/L, respectively) groups than in the control group (2.9 ± 1.8 and -1.1 ± 2.4 μmol/L, respectively). Serum blood pressure declined significantly more (P < .05) in the emulsion oil (-2.2 ± 2.0 mm Hg) group than in the control group (1.3 ± 1.5 mm Hg), and the response in the krill oil group (-0.8 ± 1.4 mm Hg) did not differ from the other 2 treatments. Blood urea nitrogen declined in the krill oil group as compared with the emulsion oil group (P < .005). No significant differences for other safety variables were noted, including adverse events. In conclusion, 4 weeks of krill oil supplementation increased plasma EPA and DHA and was well tolerated, with no indication of adverse effects on safety parameters.

**Introduction** Consumption of fish and fish oil, rich in the long-chain omega-3 polyunsaturated fatty acids eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA), has been associated with reduced cardiovascular disease risk in both clinical

# Aker BioMarine in India



Step 1: Our office in Mumbai

Step 3: Superba Krill oil in leading Pharma company's product



Step 2: Food safety approval in India

Step 4: Qrill Aqua in leading feed producer formulation





**Thank you!**



**Aker**BioMarine™