dsm-firmenich

Discover a sea of opportunities

Algal omega-3 fatty acids
in fresh dairy & alternatives

For decades, omega-3 fatty acids have been synonymous with fish oil. But with a growing global population and demand for these essential nutrients rising, fish stocks simply can't keep up. The good news?
Nature already has a solution. Algae.

"Did you know, fish don't make eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA) omega-3s? They absorb them from eating algae—the original source of these key nutrients. So, by going straight to the source, you can deliver the same powerful EPA and DHA benefits offered by fish oil—but more sustainably, ethically, and from a limitless source.

"For fresh dairy brands, both traditional dairy and plant-based, this presents a game-changing opportunity. Loved and consumed worldwide, dairy is already part of everyday life, making it an ideal vehicle for delivering meaningful nutrition. And with algae offering an abundant source of omega-3s, brands can fortify any type of milk product, fermented dairy, and plant-based dairy alternatives to bring their science-backed health benefits to more people than ever before, while appealing to a new generation of eco-conscious consumers. It's a sea of possibilities just waiting to be explored."

Elisabetta Nisoli
Director Business Development Nutrition in Fresh Dairy & Alternatives at dsm-firmenich

A new wave of omega-3 innovation is here.

→ Dive in to learn more

What's inside?

Consumer awareness is high...

Omega-3 fatty acids are an important part of the human diet and are well known to play a key role in human growth and development, as well as overall health and wellbeing throughout life.

And awareness among consumers is already strong. One global report (surveying 16,000 individuals) showed that 9 in 10 people are familiar with omega-3s and almost 23% look for these fatty acids when buying food and drink products. Among consumers who are aware of omega-3s, they are most commonly associated with heart health (34.1%), cognitive health (29.9%) and immune health (26.6%).[1]

"Awareness is high, but omega-3 sources can be confusing. Some consumers opt for flax and chia, which are rich in alpha-linolenic acid (ALA), a type of omega-3. But our bodies convert very little of it into EPA and DHA, the long chain omega-3 fatty acids responsible for key health benefits. That's why it's important to include a direct source of EPA and DHA in the diet."

Maaike Bruins
Director Nutrition Science at dsm-firmenich

...and science is strong

Backed by 50+ years of research, EPA and DHA omega-3 fatty acids are among the most studied nutrients in the world.[2,3]

Thousands of scientific papers and human trials have consistently shown their benefits across multiple areas of health—from heart and brain function to immune support, eye health, mood, sleep, and even sports performance. This extensive body of evidence enables brands to confidently fortify fresh dairy products and dairy alternative applications with well-established EPA and DHA fatty acids.

EPA and DHA omega-3 fatty acids are one of the most researched nutrients worldwide.[3]

40,000+
scientific papers

4,000+
human trials

What does the science say?

Infant development

DHA, naturally found in breast milk, is essential during the first 1,000 days—the critical window from conception to a child's second birthday. Specifically, it supports brain, eye, and nervous system development, contributes to immune system maturation, and even helps prevent preterm births; laying the foundation for lifelong health.[4,5,6]

Sports performance

With the growing trend of health-consciousness, interest in nutritional solutions that support mobility and sports performance is stepping up. Omega-3s have been shown to deliver many benefits in sports performance, likely due to their ability to balance the inflammatory response. These include enhanced endurance capacity and cardiovascular function during aerobic-type exercise, muscle strength during resistance exercise, heart rate recovery during exercise, and muscle recovery after exercise.[23,24,25,26,27,28,29] These benefits are further substantiated by the recent position stand of the International Society of Sports Nutrition.[30]

Heart health

EPA and DHA are strongly associated with heart health benefits throughout life. They maintain long-term cardiovascular health by reducing many risk factors associated with heart disease, including promoting healthy blood pressure and lipid profiles, supporting a normal inflammatory response, and maintaining a normal heart rhythm.[7,8,9,10,11,12,13,14]

Immunity

Research shows that EPA and DHA may contribute to maintaining a robust immune system by helping to resolve inflammation.[31,32,33] To support optimal immune function, consumers are advised to consume at least 250 mg EPA and DHA daily.[32]

Brain health

DHA is a key structural component of brain cells, supporting cognitive function and development across life stages. Studies show that consuming this key nutrient as we age helps to maintain brain health on two levels: it addresses cardiovascular risk factors that are linked to cognitive impairment and it helps to maintain overall brain function.[15,16,17,18,19]

Sleep

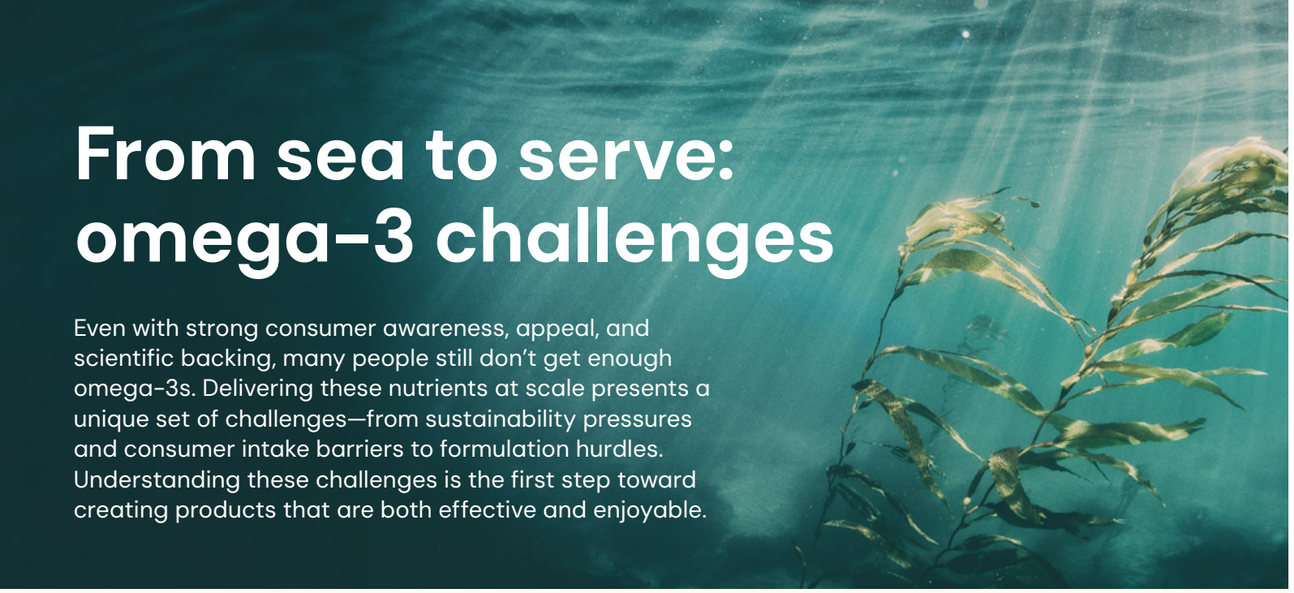
Quality sleep is one of the foundations of optimal health—yet it remains a key concern for many individuals globally. DHA may improve sleep quality and duration in adults, children, and adolescents, while low levels of DHA have been associated with reduced melatonin—an important hormone that helps us fall asleep.[34,35,36,37,38]

Eye health

Omega-3s are known to maintain normal vision. DHA is a key structural component of the retina, making up 50–60% of the fatty acids in photoreceptor cells and contributing to visual acuity and tear film stability. Human studies also show that EPA and DHA help improve eye comfort by keeping the eyes moist—particularly relevant for screen users.[20,21,22]

Mood

Growing evidence shows that EPA and DHA omega-3s support positive mood and may help reduce symptoms of depression, including perinatal depression. For instance, multiple studies demonstrate that lower circulating omega-3s are linked to poorer mental health, especially mood, whereas depression is less common in people who eat large amounts of fish rich in EPA and DHA.[39,40,41,42,43]



From sea to serve: omega-3 challenges

Even with strong consumer awareness, appeal, and scientific backing, many people still don't get enough omega-3s. Delivering these nutrients at scale presents a unique set of challenges—from sustainability pressures and consumer intake barriers to formulation hurdles. Understanding these challenges is the first step toward creating products that are both effective and enjoyable.

1. Planet

Meeting omega-3 needs sustainably

Global population growth is increasing the demand for omega-3s. But meeting this need with traditional fish oil is difficult. The fishing industry faces mounting pressures, including finite resources, climate change, rising costs, and wild fisheries are already operating at full capacity. At the same time, consumers are placing greater importance on environmentally friendly products, making them actively look for products that fit this vision.

1/3 of ocean fisheries are overfished and **2/3** are at maximum sustainable yield.[44]

Marine life has **declined by 56%** in the **last 50 years**.[45]

2. Consumer

Awareness is high, but intake is low

Consumers know omega-3s matter, but the estimated percentage of people globally with deficient omega-3 blood levels is almost 50% and intake is low in approximately 76% of individuals.[47,48] Why is that?

Several barriers stand in the way of widespread intake:

- Limited or no consumption of fatty fish, either by choice or for dietary needs
- Large capsule sizes
- Fishy smell or taste concerns
- Sustainability concerns
- Low awareness of algal EPA and DHA options
- Limited understanding of their multiple health benefits

Through smart innovation, fresh dairy and plant-based alternative innovators can bridge the gap between awareness and intake.

More than 75%

Data from 187 countries showed that in 76% of them, omega-3 intakes are less than 250 mg per day, which is the minimum intake recommendation from the FAO (Food and Agriculture Organization.[48] This shortfall represents a significant global public health concern, particularly because the 250 mg per day level is considered the minimum threshold for cardiovascular health.

3. Formulation

Integrating omega-3s into foods and beverages is technically challenging

Reducing unwanted sensory effects remains one of the biggest challenges for food and beverage manufacturers. Omega-3s are complex compounds that are prone to oxidation. If not handled properly, this can lead to off-flavors and smells—such as fishy or metallic notes. Additionally, omega-3 oils don't naturally mix with water, so techniques like emulsification or microencapsulation are required to ensure even distribution and stability throughout shelf-life.

"In my view, algae-based omega-3s are a game-changer for nutrition: they are scalable, sustainable, and able to provide these essential nutrients to a growing population without harming our oceans."

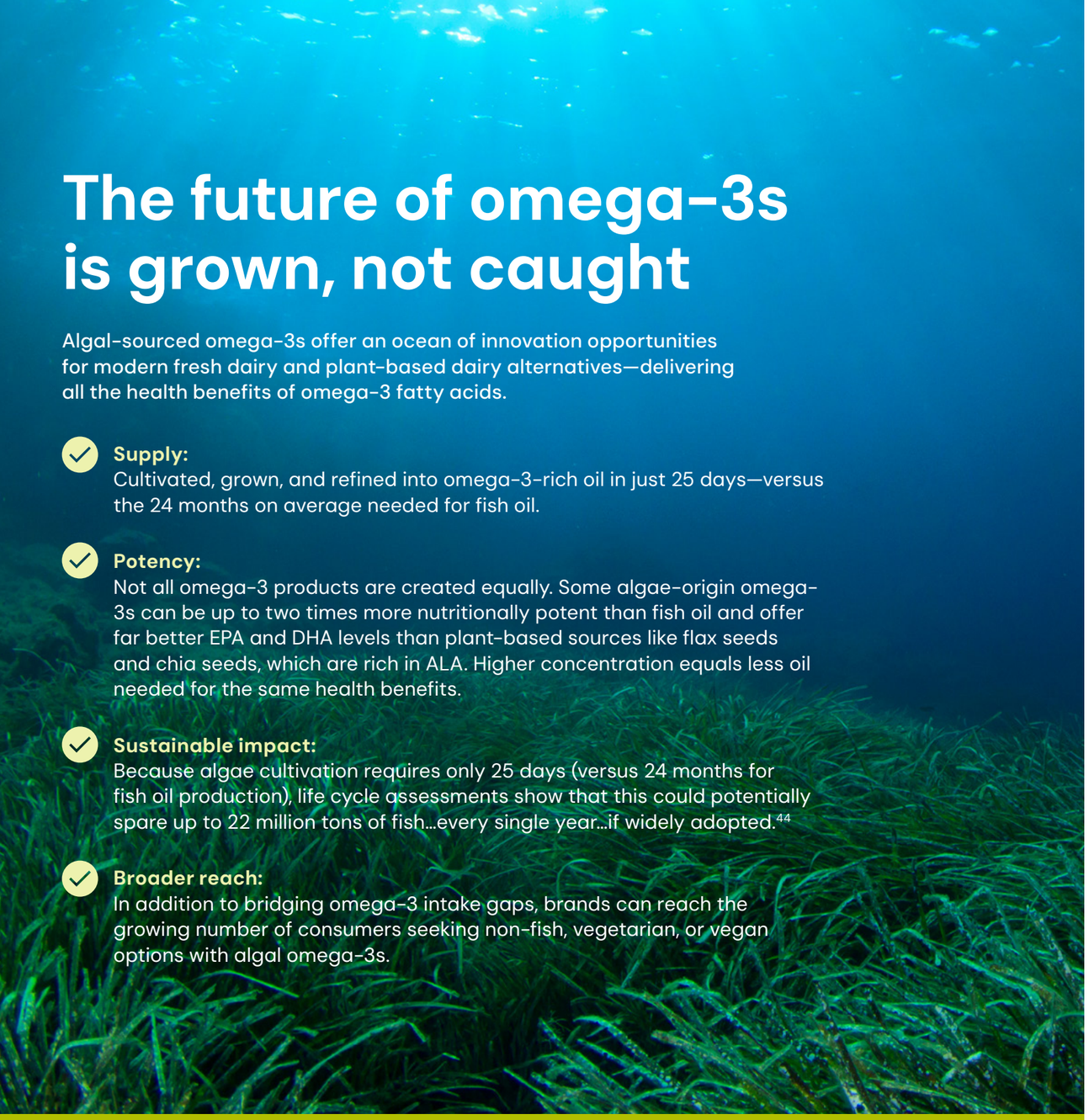
Elisabetta Nisoli
Director Business Development Fresh Dairy & Alternatives at dsm-firmenich

"Studies indicate that **62% of omega-3 users prefer plant-based sources**.[46] But unfortunately, many consumers are still unaware that vegan sources, such as algal omega-3s, exist, presenting significant growth opportunities for education-focused marketing strategies."

Maaike Bruins
Director Nutrition Science at dsm-firmenich

"Balancing omega-3 enrichment without compromising the clean, creamy flavor of fresh dairy and plant-based alternative products is challenging. But with smart formulation, advanced technologies, and the right know-how, it's absolutely possible. Decades of working with omega-3s have given us a deep, practical understanding of how these ingredients behave in real formulations meaning we know how to integrate them seamlessly into a wide range of dairy and plant-based products."

Claire Price
Global Application Director for Fresh Dairy & Alternatives at dsm-firmenich



The future of omega-3s is grown, not caught

Algal-sourced omega-3s offer an ocean of innovation opportunities for modern fresh dairy and plant-based dairy alternatives—delivering all the health benefits of omega-3 fatty acids.

- **Supply:**
  Cultivated, grown, and refined into omega-3-rich oil in just 25 days—versus the 24 months on average needed for fish oil.
- **Potency:**
  Not all omega-3 products are created equally. Some algae-origin omega-3s can be up to two times more nutritionally potent than fish oil and offer far better EPA and DHA levels than plant-based sources like flax seeds and chia seeds, which are rich in ALA. Higher concentration equals less oil needed for the same health benefits.
- **Sustainable impact:**
  Because algae cultivation requires only 25 days (versus 24 months for fish oil production), life cycle assessments show that this could potentially spare up to 22 million tons of fish...every single year...if widely adopted.[44]
- **Broader reach:**
  In addition to bridging omega-3 intake gaps, brands can reach the growing number of consumers seeking non-fish, vegetarian, or vegan options with algal omega-3s.

Hooked on **sustainable innovation?**

So are we. Make a big impact with a simple switch to algal omega-3s.

Myth-busting algae-sourced omega-3s

There's nothing fishy about algal omega-3s.

Dive into five truths about this source—and see why it might be more of a catch.

Myth 1:
EPA and DHA are produced by fish

Algae are the original source of EPA and DHA in aquatic ecosystems. By choosing omega-3s derived from algae, you help protect marine life and lower your environmental impact.

Myth 2:
Algal omega-3s offer fewer health benefits

Going directly to the source of EPA and DHA—microalgae—delivers identical health benefits for heart, brain, eye, and immune health at all stages of life. That's because the EPA and DHA fatty acids in both fish and algae are biologically equal, are just as bioavailable, and work the same in the body.

Not relying on the fish population also allows brands to bring omega-3 benefits to a greater number of people, including vegetarians and vegans in an ocean-friendly way.

Myth 3:
Non-marine omega-3s are less nutritionally potent

Scientists can cultivate algae strains with naturally higher omega-3 content or boost their EPA and DHA production by adjusting factors like UV light, oxygen, nutrients, and temperature. The result? A highly potent and sustainable source of omega-3s that nature alone can't always provide.

Myth 4:
Algae are still at risk of ocean pollutants

Grown in controlled environments and carefully purified, algal oil avoids the pollutants sometimes found in fish oil. Extracted with water rather than chemical solvents, they also steer clear of toxins such as polychlorinated biphenyls (PCBs).

Myth 5:
Algae-sourced omega-3s are fishy too

Worried about fishiness in your dairy products? dsm-firmenich's algal omega-3s have a more neutral flavor. Our rich portfolio, long-standing heritage in omega-3s, and deep application expertise allows us to fortify dairy and dairy alternative product with confidence—and without compromises. We understand these ingredients inside out, so your dairy foods remain delicious without any fishy taste or smell.

Go straight to the source with *life's*®

Inspired by NASA's work studying algae as a food and oxygen source in space missions, dsm-firmenich developed the *life's*® portfolio—a smarter, more sustainable way to fortify with omega-3s.

life's® omega-3 fatty acids are 100% fermented from natural, carefully cultivated, non-GMO algae. By going straight to microalgae instead of fish, the *life's*® family delivers science-based health benefits without impacting marine ecosystems. This allows brands to sustainably provide essential omega 3s in everyday products consumers love, like yogurts, milk beverages, and other dairy or plant-based dairy alternatives.

Suitable for vegetarians and vegans

Excellent sensory properties

Pure, fresh, and stable throughout shelf-life

Multiple forms for all fresh dairy & alternatives applications

Meet our *life's*® omega-3 solutions

Make omega-3 benefits part of everyday life—fortify fresh dairy and plant-based products with our *life's*® family.

- The *life's®OMEGA* range is the first algal-based omega-3 delivering both EPA and DHA from one single high-quality strain.
- The *life'sDHA®* range provides an algae-sourced DHA.

Why *life's*® makes the switch to algae easier than ever

Fortify with confidence:

Available in multiple stable, easy-to-handle grades for all types of fresh dairy and plant-based applications, without compromising taste, texture, or shelf-life.

Technology that protects flavor:

Our innovative and patented Powder-Loc™ double encapsulation enables a powder form that shields omega-3s from oxidation and off-notes, allowing fortification of even the most challenging applications.

Secure and reliable supply chain and pricing:

Our market-ready algal omega-3s are cultivated in just 25 days, avoiding the (on average) 24-month fish oil cycle and price volatility linked to ocean conditions.

Regulatory support:

Our algal omega-3 solutions are backed by regional expertise to help brands make clear, compliant health and functional claims in line with local regulatory guidelines.

Sustainability tested:

Limited impact on marine ecosystems confirmed by comprehensive Life Cycle Assessments (LCAs).

dsm-firmenich is the world's leading producer of algal omega-3s, with a rich heritage in the scientific research and development of these essential nutrients. Our deep expertise and leadership in algal oils set us apart, giving us unparalleled knowledge of these ingredients and enabling us to fortify any application seamlessly.

From pioneering research to real-world application, our team supports you through every stage of product development—helping you launch trusted, science-based solutions that consumers love and will return to.

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Nutritious. Natural. The next wave of omega-3 innovation.

Your end-to-end partner

It takes more than ingredients to deliver advanced fresh dairy and plant-based alternative applications fortified with algae-sourced omega-3 fatty acids; it takes an end-to-end partner that is with you from concept to consumption.

With global expertise spanning science, technology, market insight, and regulation, we tailor our support to your needs—helping you bring ideas to life, faster, and smarter.

Ready to start your algal omega-3 journey with *life's*®?

Connect with an expert today.

Contact us

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