



## **Omega-3: How do we meet consumer sustainability expectations?**

*This White Paper aims to show how the health benefits of omega-3 essential fatty acids can be aligned with consumer expectations in terms of sustainable sourcing, purity and high organoleptic quality.*

WHITE PAPER



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## “Responsible consumers”: new concerns and expectations

The many food scandals that have come to light in recent years have made consumers wary and invest more in the quality of their food. **They seek a healthy and sustainable diet** that includes products purchased from brands that not only make this commitment to quality, but also prove it! The emergence of new consumption patterns reflects the growing consumer demand for eco-responsibility. Manufacturers must adapt and seize this opportunity to make a greater **commitment to sustainability**.

Consumers now find out about nutritional quality by closely scrutinizing the labeling and list of ingredients (clean label). They are interested in the provenance and origin (**clean sourcing**) of a foodstuff or the raw materials of a food supplement, additives used and the potential for any of these to be sources of pollutants or toxins; all these have become key selection criteria. They look closely at traceability and production methods (**clean process**), and the certifications confirming overall good practices.

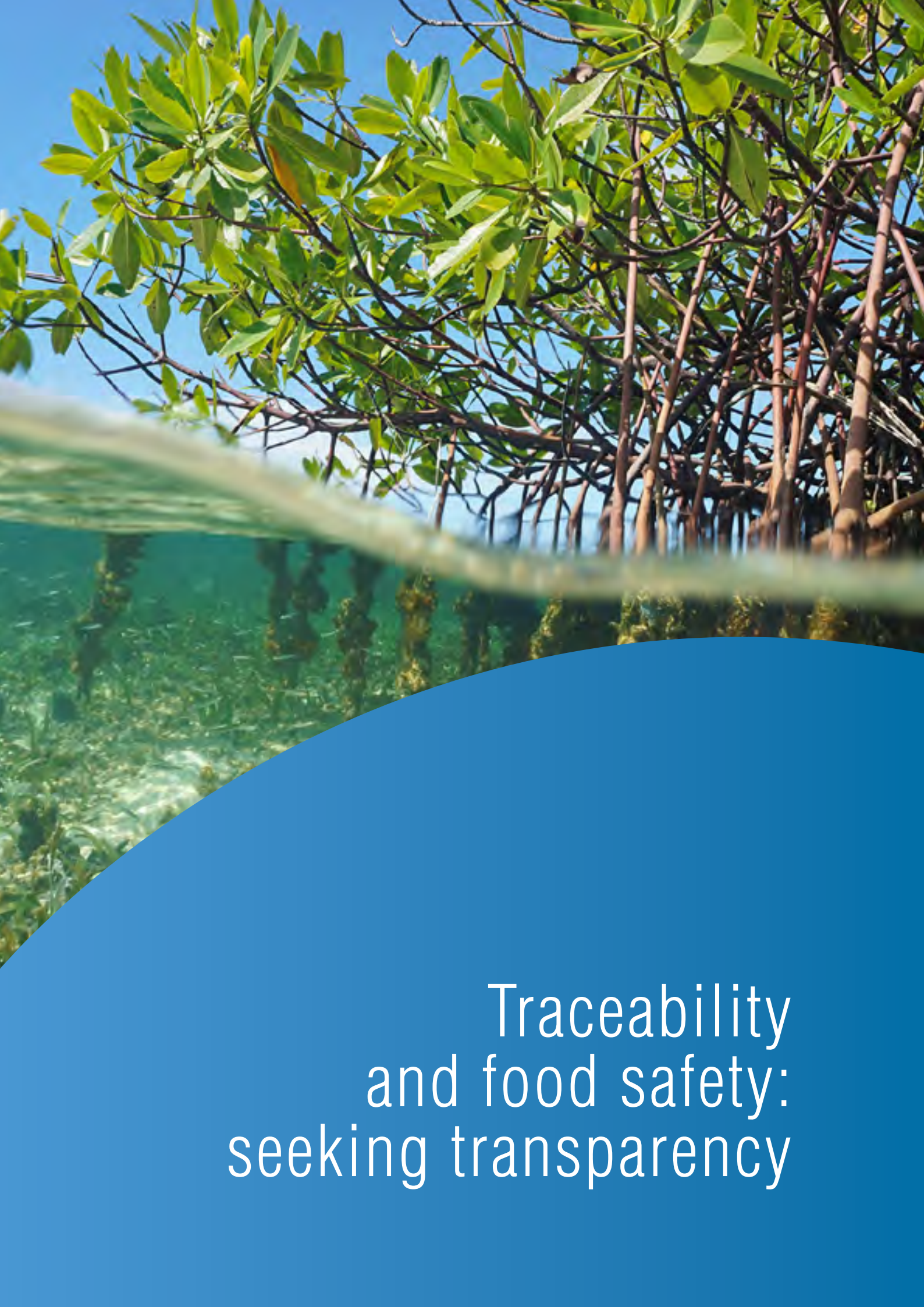
**The omega-3 market has come up against a real paradox.** Today's consumers are aware of the benefits of omega-3s for **cardiovascular health**, as well as for vision and cognitive function. At the same time, they are wary of the

potential presence of pollutants, and demand **assurances of ethical and sustainable sourcing**. They expect extremely high-quality omega-3s from producers and laboratories. The challenge for operators is therefore to take advantage of the opportunity presented by the omega-3 market in spite of these obstacles.

Consumers looking for a healthy and ethical product do not wish to compromise on **organoleptic quality either, which remains a criterion for initial choice and subsequent re-purchase**. It is true to say that the **sensory factor of omega-3** remains an issue, and can be a real obstacle to market development. Fortunately, solutions now exist with a minimal organoleptic impact.

*This White Paper aims to show how the “health” benefits of omega-3 essential fatty acids can be aligned with consumer expectations in terms of sustainable sourcing, purity and high organoleptic quality.*





Traceability  
and food safety:  
seeking transparency

## The impact of human industrial activity on the environment

After decades of overconsumption, intensive agriculture and fishing, and massive environmental pollution, traces of human pollution can even be found in the fish we eat. This never fails to repel consumers concerned about animal welfare and the health quality of products.

Human pollution damages the environment.

Visible and non-visible plastic residues in the oceans bear sad witness to the impact of human pollution on the natural world. **Microplastic fragments** smaller than 5 mm enter the food chain and threaten both animal species and human health. Did you know that 18% of tuna in the Mediterranean have plastic debris in their stomach cavities (source WWF 2019)? WWF estimates that by 2050, the oceans could

contain more plastic than fish (by weight). In 2018, faced with this frightening finding, the United Nations Environment Program ranked the issue of plastic in the oceans among the six environmental emergencies. Pollutants are found not only in the marine food chain, but also in derivative products.

And all the while, fish has been championed for its omega-3 health benefits. These unprocessed oils, rich in EPA and DHA, must undergo **multiple refining and purification stages** to make them suitable for human consumption. They can then be incorporated into food supplements, agri-food products and pharmaceuticals. To remove these pollutants and contaminants, industry uses **chemical and mechanical processes for fragile omega-3s**.

## What if the oils produced from microalgae met the requirements of consumers looking for sustainable omega-3?

In view of the potential pollution in fish oils, consumers are looking for alternative sources of omega-3 that are beneficial to their health, without the risks associated with pollutants.

New natural, pure and sustainable products are being developed, but few companies dedicated to microalgae biotechnology exist in Europe.

*Naturally concentrated DHA oils from microalgae offer a genuine alternative for meeting these sustainable omega-3 needs. Microalgae oils contain no pollutants and require only very gentle, chemical-free refining processes.*

How is this possible? These plant-based oils are produced using an above-ground fermentation process in a closed and regulated process. This highly-controlled production method eliminates any external pollution or the need for aggressive treatments, and results in natural oils of exceptional quality.

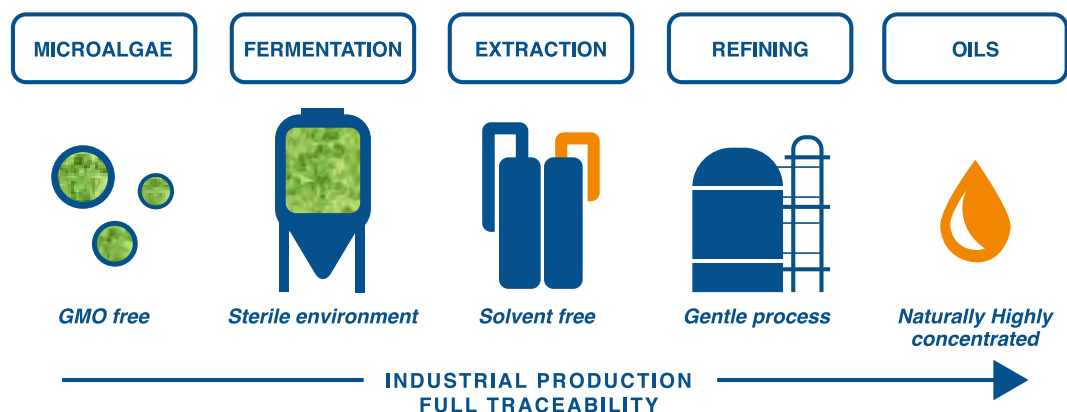
Microalgae oils naturally concentrated in omega-3 thus meet consumer expectations in terms of sustainability, environmental protection and animal welfare, in addition to being a source of healthy nutrition.

## Market expectations for assurances and commitments

### Demand solid guarantees from your omega-3 suppliers

Given these risks of contaminated marine omega-3 and the strong consumer demand for high-purity products, ask your suppliers for information on the following:

- **source**, so you can assure consumers that your product has no impact on natural resources
- **place of production**, bearing in mind that local production is something consumers believe is important
- whether the **oil extraction process** has been carried out without using solvents, so as to ensure a **clean process**
- **certificates of analysis** on contaminants to verify the purity of oils
- **oxidation indices** on the oxidative quality of oils
- the **DHA and EPA content** of the product, essential to the health benefits sought
- **whether the omega-3 supplier is a member of GOED**, the organization that has drawn up a Voluntary Monograph providing a genuine reference on quality for the market





## Prove your commitment to consumers

### With a clean label

Consumers are increasingly invested in what they buy and demanding of high standards. They analyze and compare products, composition and promises made. **Labels provide a guarantee of the latter and make brand commitment** to complying with specifications visible.

GOED represents the global EPA and DHA omega-3 industry. Its mission is to ensure that its members produce quality omega-3 products that consumers can trust.

This international organization has developed a “**GOED Omega-3 Proud Member**” logo: it indicates the voluntary adherence of producers to the GOED Monograph and ethical guidelines which provide a frame of reference for the omega-3 market.



### With guarantees of origin (clean sourcing)

Another proof of commitment can be to **highlight the origin of the omega-3s in your product**. If your oil is produced sustainably, guaranteed to be extremely pure, and comes from renewable plant sources, say so and show it on the packaging. All of these guarantees are combined in **Fermentalg's DHA ORIGINS® trademark**.

With the agreement of Fermentalg, this trademark can be used on packaging if your product is formulated from these sustainable omega-3s, naturally concentrated in DHA.

**In addition, plant-based omega-3s such as microalgae DHA provide attractive labeling opportunities** with the following statements, which are popular with consumers:

- of French origin and made in Europe
- plant-based, also suitable for vegetarians and vegans
- non-allergenic





Sustainability:  
what legacy will we leave  
to future generations?

## What is sustainable food?

The idea of sustainability is not new, but nevertheless remains complex.

*According to the UN FAO definition, sustainable food is healthy, balanced and nutritionally adapted, and at the same time is produced in a manner that protects biodiversity and ecosystems. It must also preserve cultural diversity and optimize the use of natural and human resources (UN FAO, 2010).*

According to an IPSOS survey in 2016, 83% of respondents said they did not have enough information on the social impact of products, and 78% said the same regarding impacts on the environment and health.

This shows that consumers are seeking affordable and naturally healthy products. They are also keen to find committed brands that provide ethical and environmental assurances.

## A naturally healthy diet

Sustainability and naturalness often go hand in hand. Consumers are looking for products that naturally contain health-giving nutrients. Today, they know the difference between “fortified” foods and “naturally rich in” foods. A market study conducted by FMCG Gurus in 2020 looked at consumer nutrition and the related **major trends**. Some of them relate directly to omega-3 consumption: consumers now know that their diet has a direct impact on their **long-term health**, so they are trying to change their eating habits to improve their general wellbeing. We are seeing the emergence of a **proactive approach to health**, including research into **functional and chemical-free products**.

The benefits of omega-3 are now widely recognized and scientifically-proven (by over 4,000 studies). These relate to **cognitive health, ophthalmic (AMD, dry eye) and cardiovascular health<sup>(1)</sup>; from pre- and post-natal right through to old age**.

In addition, scientific research is now focusing on their role in **immunity<sup>(2)</sup>, microbiota and neurodegenerative conditions<sup>(3)</sup>** such as Alzheimer’s disease.



## Omega-3 and health claims

The European Commission has also defined a number of health claims for EPA and DHA. Scientifically recognized and proven, **docosahexaenoic acid (DHA) claims relate to cognitive function, cardiovascular health, and vision\***:

### DHA contributes:

- to maintenance to normal brain function
- to the maintenance of normal vision
- to the maintenance of normal blood triglyceride levels

### DHA intake contributes to the normal visual development of infants up to 12 months of age.

### DHA maternal intake contributes:

- to the normal development of the eye of the foetus and breastfed infants
- to the normal brain development of the foetus and breastfed infants

### DHA and EPA contribute:

- to the maintenance of normal blood pressure
- to the maintenance of normal blood triglyceride levels
- to the normal function of heart

*\*these claims are valid for specific dosages.*

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Omega-3s, such as DHA, are part of an approach **to preventive healthcare and optimization of our health capital with a view to healthy growth and healthy aging**. This is why they are flagship ingredients in natural health products including nutraceuticals, dietary supplements and functional foods.

However, when consumers **are asked about the role of omega-3s in their health**, they are not always sure how to answer (46% of respondents, FMCG Gurus). Often, they don't know how much **omega-3** they have ingested in the previous 24 hours (24% of respondents know the amount, FMCG Gurus).

In addition, the benefits of omega-3 are only perceptible over the **long term when taken in the interests of preventive healthcare**. It is therefore important for manufacturers to educate consumers about omega-3s.

Consumers want to see **more information** on product packaging and in advertisements. **Technology** in particular could facilitate the task of communication on product **traceability** through information on websites, QR codes, health mobile applications, etc.



## A real challenge for society

A new breed of responsible consumer, one who is socially, politically and environmentally committed and informed, does not want their current health to be at the expense of their future health or the health of their **ecosystem**.

Consumers are concerned about product supply chain and also producer quality of life and remuneration: 84% prefer companies that employ local producers ([12<sup>th</sup> Greenflex 2017 barometer](#)).

The ecosystem also includes an increasingly significant **environmental dimension**. For example, we might ask ourselves about the impact of intensive fishing and catching fish

intended for the production of omega-3 oils that will then be included in food supplements. The societal challenge of sustainable food requires rethinking the global impact of food on the environment. It has been said that when we buy a product, we are also buying the world that goes with it.

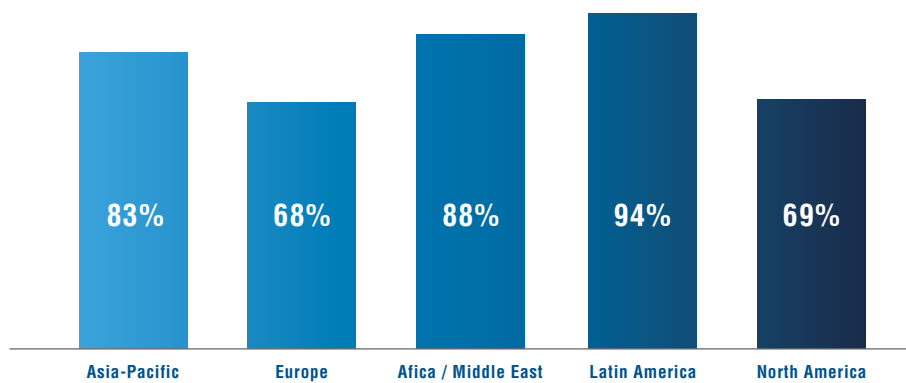
**Consumers therefore ask more questions about the origin of products and how they are produced.** Is it sustainable? Have natural resources been plundered? What are the healthy and environmentally-friendly alternatives?

## Food produced with a commitment to protecting biodiversity

**A brand's commitment to the environment appeals to consumers** and is a decisive factor when it comes to purchasing.

The graph below shows the percentage of respondents who say it is extremely or very important that companies implement environmental improvement programs (The Conference Board® Global Consumer Confidence Survey, conducted in collaboration with Nielsen Q2 2017).

Today's consumers know that the food they eat has an impact on the environment. In producing, processing or storing our food, we exploit natural resources and generate pollution. We are seeing a real awakening of consumer consciousness and a demand for manufacturer transparency.



To regain their trust in companies, consumers are expressing various high expectations of this **transparency in the way products are manufactured**. Even though pollution is still a concern, **biodiversity is an issue** that is gaining momentum, particularly in terms of animal and plant species becoming extinct.

**Ethically-sourced omega-3 dietary supplements are more environmentally-friendly and meet consumer expectations.**





## Consumers are willing to pay more for sustainable products from committed brands

One thing's for sure: consuming higher quality products is more expensive. However, according to Nielsen's latest Global Corporate Sustainability report in 2015, 66% of people across the world are willing to spend more on quality food.

Despite changes in an unstable economic climate, **70% of millennials aged 20-35 are willing to pay more for sustainable products (Nielsen Global Corporate Sustainability 2015)**. We can see that millennials are expecting firm commitments from industry and governments on the legacy that will be left to them. This is a strong signal for brands that

must commit to sustainability to maintain the trust of consumers, now and in the future.

According to FMCG Gurus, 3 out of 10 consumers want more sustainable products, particularly **products derived from fish**. The **"good for me, good for the planet"** concept is increasingly in evidence. **Ocean pollution** is consumers' biggest concern, slightly ahead of overfishing.

**Microalgae-derived omega-3s address these deeply-held concerns, giving added value to the products of manufacturers and brands that use this plant-based, sustainable source of omega-3.**





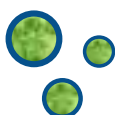
To illustrate what you can expect from an omega-3 supplier, microalgae omega-3 producer Fermentalg is committed to quality and sustainability all the way from sourcing and the supply chain right up to the customer.

## Focus on traceability

## Specific examples of Fermentalg's initiative and commitment

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### Sourcing



- Selection of microalgae strains according to the nutritional and functional characteristics identified by our R&D teams. This ethical sourcing has no impact on biomass and protects it by providing an ethical alternative.
- Ethical collection: microalgae strains are collected just once from nature. This one-time-only collection preserves biomass. It is an alternative expected by consumers to sourcing omega-3 from fish.
- Sustainable production: thanks to the capacity of microalgae to replicate, billions of daughter cells can be obtained from a single mother cell.

### Operations (clean process)



- Constant checks throughout the production chain, from design to manufacture by our engineers at each step: from inoculation, closed-circuit fermentation with perfect control of inflow and outflow, solvent-free extraction, very low-impact refining, through to storage in drums.
- A clean process: Our gentle extraction process is carried out without any solvents, thereby respecting the raw material. The above-ground production method utilized by Fermentalg uses very small areas of agricultural land, in comparison with omega-3 plant crops.
- A record high in natural concentration: it is not necessary to enrich our oils using any of the chemical processes occurring in separation/concentration technologies. Our microalgae produce naturally high-concentration DHA in the native form of triglycerides (min. 550 mg).

### Supply chain



- Selection and purification of microalgae strains are carried out by teams in our high-tech laboratories in Libourne.
- Our strains are preserved in different cryobanks so that we have back-ups for production runs.
- The production sites are based in Europe and are continuously monitored by our teams and managed via the quality systems we have in place.
- The traceability of our products is thus guaranteed, from selection of microalgae strains through to the storage of our oils in drums.

### Quality



- Fermentalg has been a member of GOED since 2017, and adheres to their commitment to the highest quality standards.
- DHA ORIGINS<sup>®</sup>, high purity oils: no heavy metals or pesticides. DHA ORIGINS<sup>®</sup> omega-3s are within the thresholds specified by the GOED Monograph and EU guidelines.



Consumers  
in search of meaning:  
organoleptic quality  
remains a choice criterion

## The sensory aspects of omega-3s

When we talk about omega-3s, their flavor and smell are often remarked on and this can be an obstacle to consumption. Omega-3 essential fatty acids provide genuine **health benefits**, so it is unfortunate that some consumers choose not to take them because of their organoleptic properties.

According to the Synadiet Market Observatory for Food Supplements 2019, [11% of consumers are dissatisfied or very dissatisfied with the taste of the food supplements they consume](#). They want products that they can include easily in their daily diet, without having to make compromises and without effort.

**Plant-based omega-3 oils are a far more pleasant alternative for consumers in sensory terms.**

## How can we optimize the organoleptic quality of omega-3s?

Various areas ensure the organoleptic neutrality essential for products to obtain high consumer acceptance:

- Work on continuous improvement of processes for manufacturing raw materials and finished products
- The selection of plant-based oils naturally rich in DHA, with a neutral flavor
- Systematic organoleptic release checks

## Innovation through difference

**Color** is the **first aspect** consumers notice. If the color is attractive, they will be more likely to buy and consume a product. Original colors can be used for products, which represent their benefits.

In its product portfolio, Fermentalg offers natural oils in 2 colors: **yellow and orange**. For example, **DHA ORIGINS® 550-O** oil has an orange to dark orange color due to the natural presence of **astaxanthin and beta-carotene**. These plant pigments have well-known antioxidant properties. They are credited with many beneficial properties, such as protecting our body's cells from free radicals, protection from sun damage, preventing cardiovascular disease and stimulating the immune system.

Product color is a genuinely **convincing differentiating factor**. Consumers can see the health benefits they will be gaining at first glance, **encouraging them to purchase a given product** and boosting their confidence in it. That said, color is not just used to attract consumers, it is also **functional**, providing information on the properties of the product.

DHA®(550)-O  
ORIGINS

DHA®(550)-Y  
ORIGINS



## IN CONCLUSION

### **Sustainable food and brand commitment have become real challenges for society.**

They create a context of trust and goodwill among producers, businesses and consumers. Consumers are ready to pay more for quality food, a source of natural health and balance for themselves and the ecosystem;

they want respect for everyone involved, and for biodiversity.

Despite their strong commitment to protecting the environment, consumers are not yet ready to sacrifice the **organoleptic quality** of products. They must remain pleasant to consume and have real benefits for health.

*In the omega-3 market, plant-based oils from microalgae more than ever before represent a natural health solution thanks to their naturally high DHA content. They meet high consumer expectations regarding ethical sourcing, environmental protection and animal welfare. Produced above ground using gentle extraction processes, they are also part of a clean process approach that results in this exceptional natural product.*

## GLOSSARY

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### **What are microalgae?**

They are single-cell organisms measuring between 10 and 100  $\mu\text{m}$ . It is estimated today that there are between 200,000 and 1,000,000 species, of which 30,000 are known and only around ten are cultivated commercially. Microalgae are characterized by their rapid growth through cell division and are generally found in aquatic environments (freshwater or marine). They can produce lipids, proteins, pigments and polysaccharides.

### **What is microalgal fermentation?**

Fermentation uses micro-organisms such as microalgae, which are able to use organic substrates as a source of energy for producing valuable molecules (lipids, proteins, pigments, etc.) The fermentation process is carried out in bioreactors that enable production under carefully controlled conditions and in large volumes, without taking up large expanses of land.

### **What is oil refining?**

Refining refers to the series of operations necessary to transform unprocessed oil; impurities are removed in order to obtain an oil with satisfactory organoleptic and chemical qualities. Algae oils that are high quality to start with require only minor deodorization and discoloration.

## SOURCES

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### REGULATIONS

- European Environment Agency. (2018). Mercury in Europe's environment. <https://www.eea.europa.eu/publications/mercury-in-europe-s-environment>
- EU (2006) Commission Regulation (EC) No 1881/2006 of 19 December 2006 setting maximum levels for certain contaminants in foodstuffs (Including various subsequent amendments) (OJ L 364, 20.12.2006, p. 5-24)
- RÈGLEMENT (UE) N o 432/2012 DE LA COMMISSION du 16 mai 2012 : <https://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=O-JL:2012:136:0001:0040:FR:PDF>

### QUALITY & CLEAN LABEL

- [www.GOEDquality.com](http://www.GOEDquality.com)

### HEALTH EFFECTS OF OMEGA 3

- <https://www.ipsos.com/fr-fr/alimentation-durable-les-francais-de-plus-en-plus-attentifs-ce-quils-mangent>
- Comment les graisses que nous consommons modulent-elles notre immunité ?
- <http://iterg.com/index.php/fr/2020/04/24/graisses-immunite/>
- Les lipides dans le fonctionnement de notre cerveau : apport des données obtenues chez l'Homme. <http://iterg.com/index.php/fr/2020/02/20/interview-c-feart/>
- De l'intérêt des lipides dans la prévention des cognitifs et visuels liés à l'âge. <http://iterg.com/index.php/fr/2020/02/18/troubles-cognitifs-lies-a-l-age/>
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- <https://alwaysoomega3s.com/>
- <https://www.fatsoflife.com/>

### CONSUMER STUDIES

- BAROMETRE GREENFLEX 2107: [https://cdn2.hubspot.net/hubfs/4276723/Etude%20les%20français%20et%20la%20consommation%20responsible%202017%20\(1\).pdf](https://cdn2.hubspot.net/hubfs/4276723/Etude%20les%20français%20et%20la%20consommation%20responsible%202017%20(1).pdf)
- The Conference Board® Global Consumer Confidence Survey, conducted in collaboration with Nielsen Q2 2017 : <https://www.nielsen.com/eu/en/insights/article/2018/global-consumers-look-for-companies-that-care-about-environmental-issues/>
- 2017 Cone Communications CSR Study : <https://www.conecomm.com/research-blog/2017-csr-study>
- Global Corporate Sustainability 2015 de Nielsen
- [http://www.synadiet.org/sites/default/files/page/files/bj18584-les\\_influenceurs\\_pour\\_synadiet\\_-\\_rapport\\_190319.pdf](http://www.synadiet.org/sites/default/files/page/files/bj18584-les_influenceurs_pour_synadiet_-_rapport_190319.pdf)

### ENVIRONMENT

- Pollution marine en Méditerranée, sortons du piège ! réalisé en 2019 par le WWF

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- (2) • Simopoulos 2002. Omega-3 Fatty Acids in Inflammation and Autoimmune Diseases. *Journal of the American College of Nutrition*
  - (3) • Yurko-Mauro et al., 2010. Beneficial effects of docosahexaenoic acid on cognition in age-related cognitive decline. *Alzheimer's & Dementia*, Volume 6, Issue 6 Pages 456-464.



**Fermentalg**<sup>®</sup>  
*Algae you can trust*

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