



Food choice chart Detailed methodology

Hi there!

If you're reading these words, it means you've decided to dig a little deeper into the subject and find out more about our exciting Food Choices chart, so for this first step, we say THANK YOU!

Curiosity, questioning, open-mindedness and using science to educate ourselves are the key words to help us take a step back and change our perceptions and eating habits. Happy reading!



Figure 1: The food choice chart (simplified version), as available on pinkbombs.org

INTRODUCTION

We have constructed two charts, a simplified version (Appendix A) and a detailed version (Appendix B)

To compare alternatives to salmon consumption, we selected the following food choices (detailed version, see Appendix B):

- salmon
- other fish: tuna, trout, sardines and mackerel
- seafood from low-trophic-level aquaculture: shellfish, seaweed, etc.
- plant-based smoked salmon
- vegetable oils
- food supplements

We have analyzed these food choices using an impact analysis grid in terms of health, ecology and ethics, encompassing social and animal condition impacts.

The detailed version incorporates additional analysis elements:

- sex-disaggregated daily omega-3 intakes
- the financial impact of food choices to meet daily omega-3 intakes
- five additional food choices: organic salmon, farmed trout, flaxseed oil, omega-3 supplements of plant and animal origin

Glossary

- Food choices: we use the expression "food choices" because this table includes animals (tuna, salmon, oysters, etc.). In fact, these are sentient living beings that take on the status of food as a result of a choice, whether individual or societal. Whether seaweed, mussels or sardines, these species, whether animal or vegetable, exist independently of the use we decide to make of them. To describe them as foods or products is to consider their existence only through the prism of the main use that human beings make of them.

Leaflet outline

1. Reading the impact colorimetric scale
2. Food selection criteria
3. Impact selection criteria : health, environment, social impacts and animal condition
4. Results and discussion : omega 3 family, omega-3 food supplements, financial cost

Appendix A - The food choice chart, simplified version with a description of each item

Appendix B - Food choice chart (detailed version)

1. Reading the impact colorimetric scale

The aim is to define the degree of impact, starting from the premise that our consumption necessarily has an impact at various levels (health, social justice, animal condition, climate, etc.). The degree of impact varies according to food choices, production methods, producer remuneration and working conditions.

- Excessively strong - Dark red
- Very strong - Red
- Strong - Orange
- Moderate - Yellow
- Reduced - Light green
- Very reduced - Dark green

2. Food selection criteria

Food choices of marine origin

The comparison was made according to the most common mode of consumption (fresh, smoked, canned) determined according to [France Agrimer consumption data for 2020](#).

- Smoked salmon: 2nd most consumed fish in France; comparison of organic and conventional production; comparison of production in sea cages versus land cages (RAS). The "smoked" consumption mode was chosen to enable an objective comparison between smoked trout and smoked salmon imitation.
- Smoked trout: 2nd most popular smoked fish after salmon in France
- Canned tuna: the most eaten fish in France
- Sardines, tinned mackerel: fish at the bottom of the trophic chain (direct synonym of the food chain) compared with salmon, tuna and trout.
- Shellfish & seaweed: seafood from sustainable, low-trophic-level aquaculture with [ecosystem benefits between seaweed and bivalves](#).

Situation of the various fish species according to the Agrimer report :

Salmon: 98% farmed; fresh salmon: 30,962 tonnes; smoked salmon: 16,697 tonnes; page 112

Tuna: 100% farmed; canned tuna: 70,350 tonnes; fresh tuna: 2,334 tonnes; page 119

Trout: 100% farmed; smoked trout: 6,369 tonnes; fresh trout: 6,053 tonnes; page 124

Sardines: canned sardines: 18173 tonnes; fresh sardines: 3249 tonnes; page 109

Mackerel: canned mackerel: 6053 tonnes; fresh mackerel: 4 195 tonnes; page 92

Most consumed shellfish: mussels: 36510 tonnes; oysters: 26 925 tonnes; page 38

Plant-based food choices

Food products were selected on the basis of their omega-3 nutritional content and their ability to position themselves as a taste alternative to certain marine-based options (notably smoked salmon). These food choices were compared according to the most common mode of consumption, accessibility and price.

- Flaxseed oil: 1st food containing the most omega-3s, sold in supermarkets for several years now.
- Rapeseed oil: 2nd foodstuff with the highest omega-3 content, sold in supermarkets for decades, a well-known and more affordable product.
- Plant-based smoked salmon: product identified as a plant-based alternative to smoked salmon in terms of taste and nutritional value. We have selected a plant-based smoked salmon produced in France, in Gironde, and rich in omega 3. Not all smoked salmon substitutes provide the same amount of omega 3, but they don't have to.

Omega 3 dietary supplements A

Comparison between omega 3 dietary supplements of plant origin and those of animal and marine origin, the price variable was introduced into the comparison in order to verify the financial impact on the food basket. The dietary supplement of marine animal origin is the one most easily found in supermarkets and drugstores. To reflect this reality, we selected a private-label product sold by Carrefour. Plant-derived dietary supplements are rarely available in conventional stores, and are often purchased online.

3. Impact selection criteria

Our impact analysis grid has been defined according to the planetary health approach. This is a global health approach that links and enables us to understand the interconnections between humans, animals and the marine and terrestrial ecosystems in which we live. Planetary health recognizes that human health depends on the good health of animals and the environment. We have therefore focused on impacts on human health, the environment, food equity and animal welfare.

HEALTH

We have broken down the analysis of health impacts in terms of risks of contamination by toxic elements and nutritional benefits, focusing specifically on omega-3 intake. In the case of oily fish, omega-3 intake is the nutritional benefit most often highlighted.

Toxic elements

To understand the type and degree of contamination, we have used the work of [French and European public health institutions](#), with [specific reference to salmon](#), and for certain issues such as microplastics, the work of scientific laboratories based abroad (see report "[Salmon: a pink bomb in a breathless system](#)"). We have taken into account microplastics and persistent organic pollutants (abbreviated to POPs), which are compounds that are persistent, bioaccumulative, toxic and mobile. POPs include the following toxic elements: heavy metals (mercury, lead, cadmium, etc.), dioxins, [polychlorinated biphenyls \(PCBs\)](#) and [per- and polyfluoroalkylates \(PFASs\)](#), better known as "eternal pollutants" .

Levels and types of contamination vary from one food to another. As soon as a food exhibited a high degree of contamination with one of the identified toxic elements, we assigned a moderate/strong/very strong impact criterion. For example, mercury is very present in tuna, but very little in salmon, which contains more microplastics and PFAS. [Oily fish \(salmon, sardines, mackerel, page 72, 74 of the CALIPSO report\)](#) and shellfish are among the species most contaminated with pollutants. As for algae, the [risk of contamination](#) varies according to water quality.

Limitations: as far as PFAS and microplastics are concerned, we're still in the early stages of scientific research, which needs to continue its work to measure the extent of these problems. For example, the scientific community has established with certainty that oily fish such as salmon are the most prone to PFAS contamination, but there are as yet no studies that have tested and verified the extent of this contamination.

Omega 3

As the consumption of oily fish is commonly recommended as a source of omega 3, we investigated whether salmon is the only interesting source of omega 3 and whether it is truly beneficial to human health. We analyzed the omega-3 nutritional benefits and pollutant risks of different food choices.

The most important finding is that, despite increasing fish consumption, [the French population is deficient in omega-3](#). The "Results & Discussion" section is dedicated to understanding this paradox and the issues surrounding omega 3.

The simplified matrix shows women's omega-3 intakes.

The detailed matrix shows daily omega 3 intakes disaggregated by gender.

We have calculated :

- daily omega-3 intake per 100g of food, calculated using [data from the ANSES Ciqual 2020 nutritional composition table](#), i.e.: [smoked salmon](#) 26097; [trout](#) 26123; [tuna](#) 26181; [mackerel](#) 26123; [sardines](#) 26034; [mussels](#) 10013; [oysters](#) 10111, [smoked salmon imitation](#); [linseed oil](#) 17180; [rapeseed oil](#) 17130;
- the ratio between the daily omega 3 intake per 100g of food and the daily nutritional intake of omega 3 (ALA, DHA, EPA) recommended by ANSES for 18 to 59 year-olds, i.e. [2.3 g for women and 3 g for men](#).

Example of calculation for smoked salmon:

Recommended intake per 100g of smoked salmon: 1.67g

Daily omega 3 coverage, as a percentage per 100g of product - Female

$1.67 \times 100 / 2.3 = 72.60\%$

Daily omega 3 coverage, as a percentage per 100g of product - Male

$1.67 \times 100 / 3 = 55.$

The same calculation was made for other foods, using the same database.

ENVIRONMENT

Biodiversity

We carried out a qualitative and quantitative analysis of impacts on aquatic and terrestrial ecosystems (eutrophication, resource depletion, ecotoxicity for freshwater aquatic ecosystems, terrestrial and freshwater acidification, depletion of energy, water and mineral resources), as well as on wild and farmed animal species. For the quantitative aspect, we opted to use data from Agribalyse (ADEME) concerning the life-cycle impact for the "agriculture" category.

[Smoked salmon](#), [trout](#), [tuna](#), [sardines](#) and [mackerel](#) (an average was taken), shellfish: [mussels](#) & [oysters](#) (an average was taken), [seaweed](#), [linseed oil](#), [rapeseed oil](#).

Smoked salmon imitation: this product is not yet referenced on Agribalyse, but the cooked ham vegetable speciality is referenced, and both its composition and manufacturing method are very similar to that of smoked salmon imitation.

Carbon footprint (CO2)

We used data from Agribalyse (ADEME), with two exceptions.

- Land-farmed salmon is not referenced on the Agribalyse platform. As a result, we are placing an interval on the database of the report "[Salmon: the pink bomb of a breathless system](#)" (pages 18 and 42).
- For the sake of consistency and scientific rigor, we decided to use two sources: Agribalyse (7kg eqCO2) and WWF (10kg eqCO2). Indeed, the Agribalyse indicator is not representative of the higher footprint of organic salmon, which consumes more pelagic fish (the specifications require that 51% of the feed be of marine origin).
- Regarding the smoked salmon substitute, its carbon footprint has not yet been calculated by Agribalyse (upcoming), but the composition of this substitute is similar to that of plant-based ham, so we have chosen to use the footprint of that product.

Sources by food choice: [smoked salmon](#), [canned tuna](#), [trout](#), [canned sardines](#), [canned mackerel](#), shellfish (average between [mussels](#) and [oysters](#)), seaweed (average between [nori](#), [Breton kombu](#), and [sea beans](#)), [flaxseed oil](#), [rapeseed oil](#), [smoked salmon substitute](#).

SOCIAL IMPACTS

Resource detour and food waste

We conducted a qualitative analysis to measure the impact on :

- [food systems](#) through
 - [detour of resources](#) and food waste
 - a food equity approach
- employment: job creation and destruction abroad and in France
- respect for human rights: labor law, right to food, risk of human trafficking

Sources: [land-farmed salmon](#), [sea-farmed salmon](#), [organic salmon](#), trout, [sardines/mackerel](#), [tuna](#), shellfish: [mussels and oysters](#), [seaweed](#), [flax](#), [rapeseed](#), [fish oil-based dietary supplements](#),

ANIMAL CONDITION

We conducted a qualitative and quantitative analysis to measure the impact on the living conditions of fish (salmon, trout, tuna, sardines, mackerel). We selected three variables.

Density

We measured the living space given to fish growing in captivity in intensive fish farms at sea or on land, to determine the degree of impact on their needs and well-being.

Sources by species: [land-farmed salmon](#) (report "Appel pour un moratoire contre les fermes-usines en France"), [sea-farmed salmon](#) (report "[Saumons: une bombe rose d'un système à bout de souffle](#)"), [organic salmon](#).

Diseases & stress

We carried out a qualitative analysis of fish health in terms of: the type of diseases and their consequences on fish health, the treatments offered and their results on sick fish as well as on other aquatic animals living around the sea cages. Some of the qualitative data is internal and from confidential sources.

Sources by species: [land-farmed salmon](#) (report "Appel pour un moratoire contre les fermes-usines en France"), [sea-farmed salmon](#) (report "[Saumons: une bombe rose d'un système à bout de souffle](#)"), [organic salmon](#).

Farming and fishing practices

We carried out a qualitative analysis of farming and fishing techniques, as well as the impact on the fish caught and non-target species.

Sources by species: [land-farmed salmon](#) ("Appel pour un moratoire contre les fermes-usine en France" report) , [sea-farmed salmon](#), [organic salmon](#), [tuna 1](#), [tuna 2](#), [sardines and mackerel](#) , [fish oil](#) and [krill-based dietary supplements](#).

4. RESULTS & DISCUSSION

The omega-3 family

- Alpha-linolenic acid (ALA): this is the only form present in plants, and therefore the only form provided by an exclusively plant-based diet. It is the precursor from which the body synthesizes other omega-3 fatty acids when they are not provided by the diet, notably :
- Eicosapentaenoic acid (EPA)
- Docosahexaenoic acid (DHA)

DHA and EPA can also be supplied exogenously by eating fish and eggs.

Issues: ALA is the only form of omega 3 present in plants, and less than 1% of the ALA consumed will be converted into DHA. This begs the question: is it necessary to supplement with DHA?

Source: *Observatoire National de l'Alimentation Végétale (ONAV)*, [Faut-il se compléter en DHA lorsqu'on végétalise son alimentation?](#) Scientific Note, October 2023

Nutritional benefits and Recommended Dietary Allowance (RDA)

Omega-3s are considered "essential" nutrients because they cannot be produced by our bodies. They enable the development and proper functioning of the retina, the brain, the nervous system and the cardiovascular system. Omega-3s are of particular interest for [cognition, memory and vision](#) in nursing mothers, pregnant women and children under six months of age.

ANSES recommended daily allowance of **omega-3s** (ALA, DHA, EPA) for 18 to 59 year-olds

- for women: 2.3 g
- for men: 3 g

Source : <https://www.anses.fr/fr/system/files/NUT2006sa0359.pdf>
<https://www.anses.fr/fr/system/files/NUT2014sa0117Ra.pdf>

ANSES recommended daily allowance of **DHA/EPA** for 18-59 year-olds

- DHA: 250 mg
- in DHA/EPA: 500 mg

Source : <https://www.anses.fr/fr/system/files/NUT2006sa0359.pdf>
<https://www.anses.fr/fr/system/files/NUT2014sa0117Ra.pdf>

Nutritional assessment

The French population is deficient in omega 3 and consumes far too much omega 6.

- 99% of adults have an inadequate daily intake of ALA
- 89% of adults have an inadequate cumulative daily intake of EPA and DHA despite increasing fish consumption

Why and how can such a paradox be explained?

ANSES recommends a maximum **omega-6 to omega-3** ratio of **5**, i.e. a maximum of 5 times more omega-6 than omega-3.

- Currently, the ratio between omega 6 and omega 3 is **10**
- Omega 6 is pro-inflammatory, vasoconstrictive and promotes cardiovascular disease
- Omega 6 is found in meat products (fish, meat, eggs, dairy products) and processed foods.

ANSES, Apports en acides gras de la population vivant en France et comparaison aux apports nutritionnels conseillés définis en 2010, Avis de l'Anses - Rapport d'étude, 2015, page 172 and 199 page

<https://www.anses.fr/fr/system/files/NUT2014sa0117Ra.pdf>
<https://www.anses.fr/fr/system/files/NUT-Ra-omega3.pdf> page 27
<https://www.anses.fr/fr/system/files/NUT2014sa0117Ra.pdf> page 23-25

Limits and recent scientific advances on the benefits of DHA supplementation and consumption

- Worldwide, studies on vegan and vegetarian diets are lacking
- No proven benefits in the fight against cardiovascular disease according to the latest US meta-analysis from 2020, [Effect of High-Dose Omega-3 Fatty Acids vs Corn Oil on Major Adverse Cardiovascular Events in Patients at High Cardiovascular Risk](#)
- Benefits for preserving brain aging in the elderly (see bibliography at end)
- No proven benefits for pregnant women/children on cognition, memory or vision in babies. Large doses can have negative effects. (see bibliography at end)

The best plant sources of Omega 3

The infographic below was produced by "[Je mange végétal](#)" and presents the best plant sources of omega 3. The poster [can be downloaded here](#).

Note: flaxseed and rapeseed oil have an excellent omega-3/omega-6 ratio and are therefore to be preferred.

Légumes, céréales, légumineuses et fruits crus



Tofu



Chou frisé



Kiwi



Épinard



Cresson alénois

Légumes, céréales, légumineuses, fruits et champignons cuits



Tofu



Flageolet



Haricot blanc



Protéine de soja texturée



Chou-fleur



Brocoli

Oléagineux, farines, huiles, graines, fruits à coque et eaux



Huile de lin



Graine de lin



Graine de chia



Huile de noix



Graine de chanvre



Huile de colza



Noix



Huile de soja



Huile de germe de blé

Supplementing with omega-3

Omega-3 supplementation can sometimes be necessary, so here's some information to keep in mind.

To get the omega-3s corresponding to the daily RDA, it is possible:

- eat foods rich in ALA (rapeseed oil, linseed oil, flax/chia seeds, walnuts, etc.).
- supplementing with DHA/EPA of origin
 - plant-based, made from seaweed (*Schizochytrium*), healthy and without risk of contamination from heavy metals, PCBs, PFAS and microplastics
 - with krill and fish oil, presenting an increased risk of heavy metal, PCB and PFAS contamination

Fish oil-based dietary supplements

Fish obtain their DHA/EPA intake by consuming algae. Fish and [krill are](#) harvested and processed into capsule fish oil to provide DHA/EPA for the human population

Marine-based dietary supplements are a highly lucrative market, with a major impact on marine ecosystems, this market contributes to overfishing and [krill harvesting](#). The benefits of these supplements are the subject of much controversy, as they are often loaded with PCBs from the fish oil or the manufacturing process (purification). In the absence of specifications - a supplement is not a medicine - the choice of quality and verification of benefits is left to the manufacturer.

Algae-based plant food supplements - *Schizochytrium*

This dietary supplement is made from low-impact microalgae, which are healthy for human health because they are free from contamination by heavy metals, PCBs, PFAS and microplastics.

For the moment, the development of the industry is geared towards supplementing farmed animals consumed by humans. The agri-food industry is seeking to enrich the feed of cows, pigs and salmon with plant-based omega-3s (linseed and *Schizochytrium* algae respectively, to replace expensive, [carbon-intensive fish oil](#)).

This approach has its limitations:

- Even when enriched with omega-3s, a predominantly meat-based diet (meat, fish, eggs, dairy products) does not solve the problem of overconsumption of omega-6s, which are very present in these food choices.
- It indirectly supports intensive livestock farming, a major source of greenhouse gas (GHG) emissions.
- It ignores food waste and the loss of energy from the addition of an extra intermediary (an animal) between the plant source and humans. This loss is explained by Lindeman's 10% law of energy transfer in ecosystems: at each trophic level an energy loss (in calories) of 90% is observed, leaving only 10% of available energy (in calories) [Eléments d'écologie : Ecologie fondamentale - 4e édition. Chapter 5 - Energy flows and the matter cycle in ecosystems](#).

Financial cost

We have selected and compared the following food choices:

- fish with the highest omega-3 content: salmon and sardines
- animal-based dietary supplements based on fish and krill oil
- plant-based food supplements based on Schizochytrium microalgae
- the plant food with the highest omega-3 content: linseed oil

	Fresh salmon (110g pavé)	Sardines (100g box)	Fish oil dietary supplements (120 capsules, 2/day)	Food supplements of plant origin (60 capsules, 1/day)	Linseed oil (one teaspoon/day 5g)
Cost for 31 days	82.15€	55.49€	17.8€	13.3€	2.66 €
Unit cost	5,30€	1,79€	23€	25.9€	4.29€
Cost per day	2,65€ *	1,79€**	0.575ct	0.43 ct	0.08ct

Salmon, 110g/day block, consulted on 04/04/2023:

<https://www.carrefour.fr/p/paves-de-saumon-avec-peau-s-arete-simpl-3523680491977>

* Even if you eat a slab of salmon every day, you won't reach your daily requirement of omega-3 DHA/EPA. For women, this represents an intake of 98.5%, and 75% for men.

Unit price €5.30

Calculation for 1 month/31 days: $5.30 \times 15.5 = 82.15€$.

Daily calculation: $5.30 / 2 = 2.65€$

NB: As selected salmon is most commonly sold in trays of two 110g blocks, and the calculation is based on one block per day, the unit price is divided by two.



Pavés de saumon avec peau s/arête SIMPL
la barquette de 2 - 220g

24.05 € / KG

Origine
NORVÈGE

[Voir tous les produits du rayon >](#)

Paiement 100% sécurisé
Satisfait ou remboursé

Drive ou Livraison

5,29€

Le prix de ce produit dépend de votre mode de retrait (Drive ou Livraison) et de votre magasin.

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Sardines in 100g cans, viewed on 31/05/2024

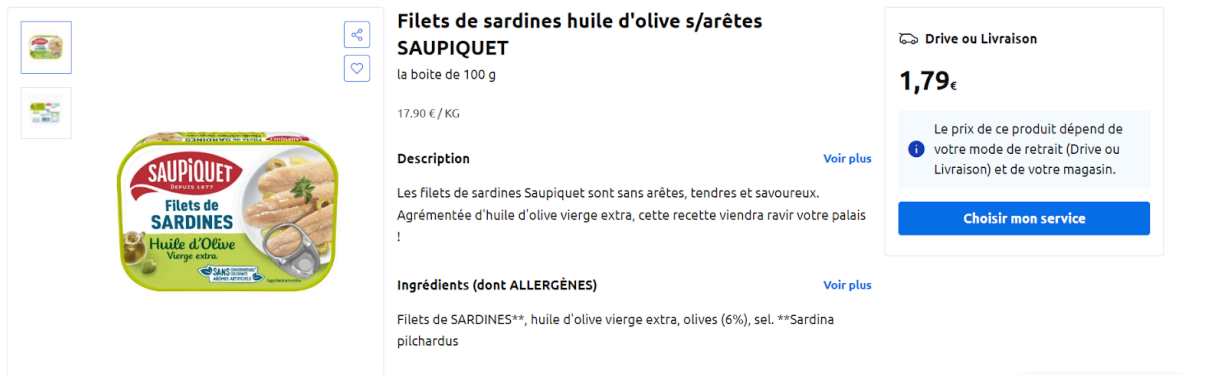
<https://www.carrefour.fr/s?q=sardine>

** sardines are commonly sold in 80-100g cans, drained. Even if you eat a can of sardines every day, you won't reach your daily requirement of omega-3 DHA/EPA. For women, this represents an intake of 80.5%, and 61.6% for men.

Unit price €1.79

Calculation for 1 month/31 days: $1.79 \times 31 = €55.49$

Daily calculation: €1.79



Filets de sardines huile d'olive s/arêtes SAUPIQUET
la boîte de 100 g

17.90 € / KG

Description [Voir plus](#)

Les filets de sardines Saupiquet sont sans arêtes, tendres et savoureux. Agrémentée d'huile d'olive vierge extra, cette recette viendra ravir votre palais !

Ingrédients (dont ALLERGÈNES) [Voir plus](#)

Filets de SARDINES**, huile d'olive vierge extra, olives (6%), sel. **Sardina pilchardus

Drive ou Livraison

1,79€

Le prix de ce produit dépend de votre mode de retrait (Drive ou Livraison) et de votre magasin.

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DHA/EPA dietary supplements based on fish oil, consulted on 04/04/2023:

<https://www.carrefour.fr/p/omega-3-huile-de-poissons-sauvages-2000mg-omega-3-issus-de-peche-durable-120-gelules-anti-oxydation-377001276411>

Unit price €23 for 40 days (2 capsules/day)

Daily calculation: $23/40 = €0.575$ ct

Calculation for 1 month/31 days: $0.575 \times 31 = €17.8$



Omega 3 Huile De Poissons Sauvages 2000mg, Oméga-3 Issus De Pêche Durable, 120 Gélules Anti Oxydation, Nutri&co
les 120 unités

Description [Voir plus](#)

- **HAUTE CONCENTRATION & ABSORPTION** •
Une formule composée d'huiles de poissons sauvages hautement concentrées sous forme naturelle de triglycéride. 3 gélules de taille standard apportent 1500mg d'huile de poissons et 1050mg d'oméga-3 dont 750mg de dHA et 150mg d'EPA.
- **SANS ODEUR** •
Nos huiles d'oméga-3 sont 100% désodorisées pour vous éviter ainsi les relents et...

Ingrédients (dont ALLERGÈNES) [Voir plus](#)

Ingrédients : Huile de poissons sauvages (anchois, sardines, maquereaux)

Vendu et livré par **NUTRI & CO**

22,90€

[Meilleure offre partenaires](#)

Livraison 5€ sous 5 à 7 jours ouvrés

[Ajouter au panier](#)

[L'assistant intelligent](#)

DHA/EPA dietary supplements of plant origin for 2 months (60 days), consulted on 04/04/2023:
<https://www.officialveganshop.com/dha-omega-3-vegan-essentiels-argalys-8456.html>

Unit price €25.9 for 2 months

Calculation for 1 month/31 days: €25.9/2 = €13.3

Daily calculation: 13.3/31 = €0.429 ct



DESCRIPTION DU PRODUIT

DÉTAILS DU PRODUIT

AVIS : 4,9/5 POUR 21 AVIS

Le DHA Oméga 3 Argalys Vegan Essentiels est un complément alimentaire certifié vegan ! Il est formulé à base de microalgue Schizochytrium Sp.
La dose de 250mg par gélule de DHA contribue au bon fonctionnement du cerveau, de la vision et du système cardio-vasculaire.
L'indice d'oxydation est particulièrement faible pour chaque gélule. Contrairement aux capsules standard, ici les omégas 3 préservent tous leurs bienfaits.
De plus, le DHA oméga 3 d'Argalys n'a pas d'impact négatif sur la faune marine !

Linseed oil, 250ml bottle, consulted on 04/04/2023:

<https://www.carrefour.fr/p/huile-bio-de-lin-carrefour-bio-3560071402556>

Contribution per 100g flaxseed oil = 53.3g ALA (no DHA/EPA)

Daily coverage in omega 3, in percentage per 100g of product - Woman = 2317%.

Daily coverage in omega 3, in percentage per 100g of product - Man = 1777%.

Necessary intake to reach 100% of daily allowance (RDA)

- Female: $100 \times 100 / 2317 = 4.31$ g

- Men: $100 \times 100 / 1777 = 5.6$ g

On average, one teaspoon (or 5 g) of linseed oil is needed to meet the daily requirement. A bottle of linseed oil is generally sold in 250 ml (250 g) format, which means it can be consumed over 50 days ($5 \times 50 = 250$).

Unit price €4.29 for 50 days

Calculation for 1 month/31 days: $0.086 \times 31 = €2.66$

Daily calculation: $4.29/50 = 0.08$



Huile bio de lin CARREFOUR BIO
la bouteille de 25cl

17.16 € / L
★★★★☆ (631)

Ingrédients (dont ALLERGÈNES)
100% huile vierge de lin biologique
Peut contenir des traces de FRUITS A COQUE et de graines de SESAME

Valeurs nutritionnelles
Valeurs nutritionnelles pour 100 ml

Valeur énergétique (kJ)	3404 kJ / 100 ml
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Drive ou Livraison

4,29€
10% d'économies

Le prix de ce produit dépend de votre mode de retrait (Drive ou Livraison) et de votre magasin.

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Appendix A- The food choice chart, simplified version with a description of each item

	Criteria description	Salmon (land farming)	Salmon (sea farming)	Yellowfin tuna	Sardines, mackerel	Shellfish (mussels, oysters)	Algae	Smoked salmon imitation	Rapeseed oil (organic)
Toxic elements	Impacts on human health. Level of contamination by eternal pollutants (PCB, PFAS), heavy metals and microplastics.	5 - PCB, PFAS and microplastic contamination. Main mode of impregnation: oily fish and shellfish.	5 - PCB, PFAS and microplastic contamination. Main mode of impregnation: oily fish and shellfish.	6 - Tuna is the fish with the highest level of mercury contamination.	5 - Oily fish are among the species most contaminated by pollutants.	4 - Shellfish are among the species most contaminated by pollutants.	2 - Algae contamination varies according to water quality.	1 - Smoked salmon imitation contains no toxic elements (PCBs, PFAS, microplastics).	1 - Organic rapeseed oil contains no toxic elements (PCBs, PFAS, microplastics).
Omega 3 intake	Impact on nutritional health. Paradoxically, the French population is deficient in omega-3s, despite the increase in fish consumption. Find out why in our methodology.	2 - Eating 100g of smoked salmon daily covers 73% of daily omega 3 requirements. DHA and EPA type omega 3 ↗ .	2 - Eating 100g of smoked salmon daily covers 73% of daily omega 3 requirements. DHA and EPA type omega 3 ↗ .	5 - Consuming 100g of yellowfin tuna daily covers 29% of daily omega 3 requirements. DHA and EPA type omega 3 ↗ .	1 - Consuming 100g of sardines/mackerel daily covers 93% of daily omega 3 requirements. DHA and EPA type omega 3 ↗ .	5 - Eating 100g of shellfish daily covers 17% of daily omega 3 requirements. DHA and EPA type omega 3 ↗ .	6 - Seaweed does not contain omega 3.	2 - Consuming 100g of similli daily covers 74% of daily omega 3 requirements. DHA and EPA type omega 3 ↗ .	1 - Consuming 100g of rapeseed oil daily covers 328% of daily omega-3 requirements. To reach 100% of daily intake per 100g, 2 to 3 tablespoons a day are sufficient. ALA-type omega 3 ↗ .
Biodiversity	Impacts on aquatic and terrestrial ecosystems & on wild and farmed animal species.	5 - Strong environmental pressures linked to salmon feed: the supply of vegetable meal contributes to deforestation in Amazonia; fish meal exacerbates over-fishing and the decline in wild fish populations.	6 - Strong environmental pressures linked to salmon feeding and significant degradation of water quality in the marine environment: discharge of nutrients and excrement, eutrophication and phytoplankton bloom, discharge of pesticides and microplastics.	6 - The techniques used by tuna fisheries impact many non-target species (100,000 tonnes of by-catches and discards every year in the world's tuna fisheries).	4 - Terrestrial and freshwater acidification, depletion of energy and water resources, ecotoxicity for freshwater aquatic ecosystems.	4 - Depletion of energy resources.	5 - Acidification of land and freshwater, depletion of mineral resources.	2 - Low impact on terrestrial and aquatic ecosystems and wildlife.	1 - Organic production has virtually no impact.
Carbon footprint	Greenhouse gas (GHG) emissions.	6 - The carbon footprint of salmon (land-based farming) is estimated at between 2 and 14kg of CO2 equivalent per kg of salmon produced.	5 - The carbon footprint of salmon (sea farming) is estimated at between 7 and 10kg of CO2 equivalent per salmon produced.	3 - The carbon footprint of yellowfin tuna is estimated at 4.4kg of CO2 equivalent per kg of tuna produced.	4 - The carbon footprint of sardines/mackerel is estimated at 7.26kg of CO2 equivalent per kg produced.	4 - The carbon footprint of shellfish is estimated at 5.7kg of CO2 equivalent per kg produced.	4 - The carbon footprint of seaweed is estimated at 6.7kg of CO2 equivalent per kg produced (average for ulva, nori, kombu breton, haricot de mer).	1 - The carbon footprint of similli is estimated at 1.6kg of CO2 equivalent per kg produced.	2 - The carbon footprint of rapeseed oil is estimated at 2.3kg of CO2 equivalent per kg produced.
Social impact	Impacts on human rights, fair access to food and employment.	6 - Strong detour of soya production and small pelagic fisheries to feed salmon, to the detriment of human populations: 90% of the world's industrial fishing catches are made up of species directly edible by humans.	6 - Strong detour of soy production and small pelagic fish fishing to feed farmed salmon, to the detriment of human populations: 90% of the world's industrial fishing catches are made up of species directly edible by humans.	6 - Tuna farming on farms (65% of the tuna produced) pollutes water and land with chemicals and antibiotics. Fish get sick, and diseases can spread quickly via the seabirds that eat them.	4 - Sardine/mackerel fishing is carried out in the North-East Atlantic Ocean (Mediterranean, Morocco and Mauritania) using purse trawls and pelagic seines, jeopardizing the food security of local communities.	3 - Shellfish production is a major source of employment (around 17,000 people), and involves family labor.	1 - The development and consumption of algae is recommended as a means of transforming the food system by international (FAO) and European institutions, and corresponds to the SDG (Sustainable Development Goal) on sustainable/low-trophic-level aquaculture. This is a booming sector.	2 - Local, job-creating production.	1 - Rapeseed oil production is a job-creating industry. It needs support for organic production.
Animal condition	Impacts on animal living conditions according to cage density, disease, farming and fishing practices.	6 - On land-based salmon farms, densities range from 70 kg to 150 kg of salmon per cubic metre of water, increasing the risk of infectious diseases.	5 - In sea-cage salmon farms, densities are around 25 kg of salmon per cubic meter of water. Welfare is degraded at a threshold of around 10-20 kg/m3.	6 - Suffering of captured tuna: after suffocation and agony, they are frozen alive in the holds of ships. 100,000 tonnes of non-target species are caught and discarded each year in the world's tuna fisheries.	3 - Stress and suffering linked to the agony of fish trapped in nets.	2 - Little impact on animal welfare.	1 - No impact on animal welfare.	1 - No impact on animal welfare.	1 - No impact on animal welfare.

