



SINCE 1938

The World's  
Leading Fish Oil  
Producer



# World market leader with a long history

Founded in 1938, LYSI hf. is one of the world's largest producers of marine oils for human consumption and a pioneer in fish oil production.

It all started in 1936 with the demand for Icelandic cod liver oil as a natural source of vitamin A and D. Two ambitious brothers, Tryggvi and Thordur Olafsson, started sourcing and processing cod livers in Reykjavik. Together they founded LYSI on January 10, 1938.

Today, LYSI exports fish oils in large quantities (bulk) to food and pharmaceutical manufacturers around the world as well as consumer products packaged at the LYSI factory in Reykjavik. The consumer products are sold either under the LYSI brand or under the customer's own brand.

Although LYSI is primarily an export company, an important domestic market has developed in Iceland. LYSI has a market share of about 85% in the Icelandic Omega-3 supplement market, with various consumer products available for sale in local stores, supermarkets and online.

LYSI is a leader in its field and has the expertise to produce fish oil products that are in demand from Icelandic fish stocks and imported crude fish oils from other parts of the world. LYSI uses its extensive equipment and know-how to offer a wide range of natural health products to its customers, many of whom have worked with the company for decades, and our list of satisfied customers continues to grow.

Continued focus on the properties and applications of marine lipids, as well as effective international business partnerships, have made LYSI what we are today:

**THE WORLD'S LEADING PRODUCER OF FISH OIL**



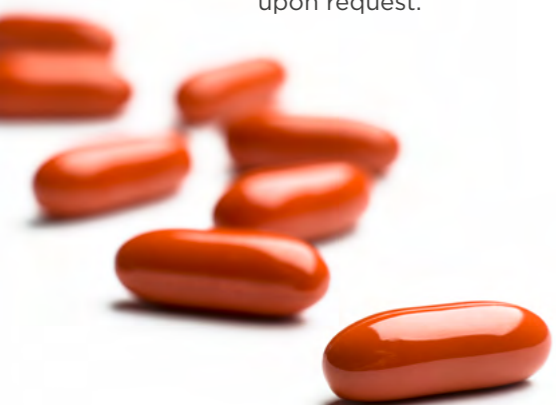


## Bulk products

### Food Grade

LYSI fish oils are produced according to FSSC 22000 and GMP guidelines and are characterised by high product quality and consistent service. The focus is on fish oils suitable for human consumption. LYSI offers a range of standard products that can be customised to meet customers' needs.

The fish oil products comply with the main pharmacopoeias and GOED monograph and meet all regulatory requirements regarding environmental contaminants. The products are free of genetically modified materials (GMO) and ingredients and can be fortified with vitamins A, D, and E, antioxidants, and flavours upon request.



Our bulk products can be delivered worldwide, with frequent shipping from Reykjavik through major European and N-American ports.

LYSI refinery is equipped with highly specialised processing equipment required for the production of high quality fish oil. This enables LYSI to offer a wide range of products that meet customers' requirements for quality and flexibility.

### Bulk products

Cod liver oil

Cod oil

Omega-3 fish oil

Tuna oil

Salmon oil

Omega-3 Ethyl Esters 33/22

### API

Offering natural fish oils as active pharmaceutical ingredients has put LYSI in a unique position in the market.

For several years there has been an increasing demand for pharmaceutical grade fish oils, and today some markets require fish oils to be registered as pharmaceuticals.

To meet the needs of its customers, LYSI has adapted its processes to meet the requirements of Good Manufacturing Practise (GMP) standards for Active Pharmaceutical Ingredients (API). This work was completed with GMP certification in 2007.

In September 2014, after passing an audit by the Icelandic Medicines Agency, LYSI was registered in the European Inspections database as an approved API manufacturer.

LYSI can now offer both cod liver oil and omega-3 fish oil as active pharmaceutical ingredients to its customers. With the expertise and experience gained in registering API products, LYSI also offers its customers support in registering their own products.



API oils at LYSI are based on the relevant monographs of the European Pharmacopoeia. As part of the purchase of API-grade fish oil from LYSI, an Active Substance Master File (ASMF) is available to our customers at a reasonable cost. The ASMF is required for registration of medicinal products within the EU. This includes appropriate validations and stability data in accordance with the guidelines of ICH.

### API products

Cod liver oil

Omega-3 fish oil





## Consumer products

LYSI offers a wide range of fish oils with different levels of omega-3 EPA/DHA fatty acids. Products can be customised according to customer needs, by blending different oils and/or adding vitamins, antioxidants and flavours.

### Form and Functionality

Our products come in different forms. The different types of fish oil have different functions that meet the preferences and needs of our various end users.

### Pure Form - Fish Oil

The liquid fish oil that you take with a spoon or drizzle over your salad. It is the purest and most natural form.

### Fish Oil Capsules

The most popular form - a capsule of liquid fish oil that you swallow with a glass of water.

### Chewable Capsules

The latest form - a chewable capsule that comes in fruity flavours to suit children's tastes.

### LYSI Consumer Products

LYSI has four main consumer products that it has been manufacturing for decades. Our brand is known in over thirty markets worldwide, with new markets being added every year. Using a process that has been refined and perfected since the 1940s, we produce the following high-quality consumer products:



#### Cod Liver Oil

Cod liver oil is a good source of omega-3 fatty acids, one of which is the fatty acid DHA, which plays an important role in brain development.



#### Shark Liver Oil

Shark liver oil is considered to be particularly beneficial for the immune system because it is rich in alkoxyglycerols, which support the production of white blood cells in our body.



#### Capsules and Supplements

LYSI has a wide range of food supplements, multivitamins, calcium and other substances that are believed to have a positive effect on the body. These supplements are always accompanied by a fish oil capsule to ensure the daily dose of omega-3 fatty acids.



#### Omega-3

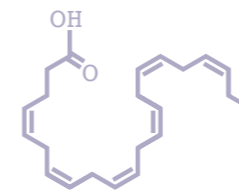
Omega-3 fatty acids are essential for us, as our body cannot produce them by itself. Therefore, it is important that we receive omega-3 fatty acids with food or supplements.

### Inside LYSI Fish Oil

LYSI fish oils are a rich source of long-chain, polyunsaturated omega-3 fatty acids, especially EPA and DHA. These are essential for the proper functioning of the human body. Since our bodies cannot produce these fatty acids

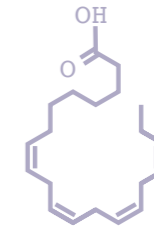
themselves, they must be obtained through a healthy, balanced diet of fish or by taking fish oil supplements. LYSI cod liver oil also contains high levels of vitamins A and D, as well as some vitamin E, which are also necessary for the healthy growth and function of the human body.

### Omega-3 fatty acids:



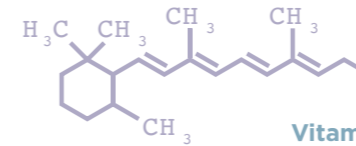
#### DHA

DHA is necessary for healthy vision, brain and heart function. A daily intake of 250 mg is recommended by the EFSA in order to obtain certain beneficial effects.



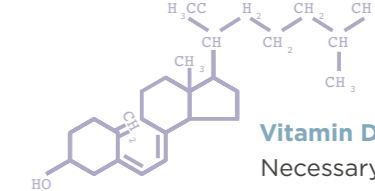
#### EPA

EPA is necessary for healthy heart function. A daily intake of 250 mg is recommended by the EFSA in order to obtain certain beneficial effects.



#### Vitamin A

Necessary for healthy vision, immune function and cell growth.



#### Vitamin D

Necessary for healthy teeth and bone development.

**Mood and Mind**  
Some studies point towards the positive effects of fish oil on mental illness

**Joints**  
Omega-3 Joints contains vitamin C, which has a positive effect on collagen synthesis in cartilage

**Bones**  
Vitamin D contributes to healthy bones

**Immune System**  
EPA and DHA, possess the most potent immunomodulatory activities of all fatty acids

**Brain**  
DHA contributes to maintenance of normal brain function

**Eyes**  
DHA and Vitamin A contribute to the maintenance of normal vision

**Teeth**  
Vitamin D contributes to healthy teeth

**Heart**  
EPA and DHA contribute to the normal function of the heart. DHA helps maintain normal blood triglyceride levels

**Blood Pressure**  
DHA and EPA contribute to the maintenance of normal blood pressure





## Sustainability

The production of the highest quality fish oil today and in the future depends on the preservation of fish populations in our oceans. The vibrant fisheries in the waters around Iceland are an extremely important source of raw materials for LYSI.

LYSI offers sustainably certified products from fish stocks that are responsibly harvested and are not listed as endangered species. We believe that a truly good omega-3 product should not come at the expense of the environment and consider it our responsibility to uphold these standards.

**LYSI holds the following sustainability certifications:**



® A project of the World Sustainability Organisation that assures the public that fish products come from responsibly and sustainably managed fisheries.



Standard that ensures fisheries are well managed and responsibly harvested to prevent overfishing and secure seafood supplies for the future.

## Respect for the environment

Respect for the environment is a major factor in every aspect of LYSI's operations and is part of the quality ethos. LYSI always strives to

- Recognise the importance of sustainable fisheries
- Use energy from renewable sources
- Ensure effective waste management
- Maximise the utilisation of raw materials

All LYSI production takes place in Iceland, a country known for its pure and pristine environment, fresh water and clean air. Approximately 85% of primary energy consumption in Iceland comes from indigenous renewable resources, mainly hydropower and geothermal energy.

LYSI documents CO<sub>2</sub> emissions from direct energy use (GHG Protocol, Scope 1 and 2) and in recent years has focused on complete energy transition in production. This has led to a halving of annual fossil fuel consumption and a one-third reduction in total CO<sub>2</sub> emissions since 2020. Today over 95% of the energy consumed by LYSI comes from renewable sources.

LYSI is one of the key players in Iceland's policy to fully utilise everything from the fishing industry. As a leading expert in the production of valuable products from by-products and waste from traditional fish production, the company makes an important contribution to the responsible utilisation of natural resources.



## Production

Although LYSI has been in business for several decades, the processing facility inaugurated in 2005 and expanded in 2012 has elevated LYSI's status to one of the world's most advanced processors of its kind.

The plant is uniquely equipped with highly specialised production units for complete fish oil processing and is specifically designed for flexibility and customised solutions.

Independent processing steps allow simultaneous processing of different types of oil, enabling LYSI to maintain the shortest possible lead time. By using the latest technology, LYSI ensures that production complies with strict regulations and that consumer requirements for low pollutant content and oxidation of end products can be met.

The company has achieved optimal utilisation of its equipment and know-how, offering its customers an expanded range of natural health products.

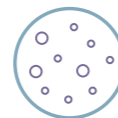


### The processing of fish oil includes:



#### Neutralisation

The oil is neutralised by removing free fatty acids with sodium hydroxide solution.



#### Bleaching

Pigments and contaminants are removed by using adsorbents such as bleaching earth and activated carbon.



#### Winterisation

High melting triglycerides are removed by cooling the oil and filtering off the solid fraction.



#### Short Path Distillation (if required)

Contaminants are removed from the oil by distillation under ultra-high vacuum and elevated temperature.



#### Deodorisation

Volatile components are removed by steam injection under high vacuum and elevated temperature.



#### Standardisation

Once production is complete, a standardisation process is performed to balance the vitamin content and add antioxidants and flavours as needed.

## Quality

Quality is our top priority. That is why we strive to produce and deliver products that meet the needs and requirements of our customers. These products must be delivered in the right quality, at the right time and in the right quantity.

Quality management with active participation and support from management and employees is key to ensuring product quality and services.

The company has established a certified quality management system that complies with Icelandic and EU legislation on food and pharmaceuticals. The quality management system is under continuous review to improve quality and safety of product and service.

### LYSI holds the following quality certifications:



#### FSSC 22000

An internationally recognised food safety management standard based on ISO 22000 and recognised by the Global Food Safety Initiative (GFSI).



#### GMP

A standard for minimising risks in pharmaceutical production that must be complied with by drug manufacturers.



#### Halal

A guarantee that products meet the requirements of Islamic law and are therefore suitable for consumption by the Muslim population.



#### AOCS-approved chemist

Laboratory suitability program administered by the American Oil Chemists Society (AOCS).





LYSI hf.  
Fiskislod 5-9  
101 Reykjavik  
Iceland

Tel +354 525 8100  
[lysi@lysi.com](mailto:lysi@lysi.com)  
[www.lysi.com](http://www.lysi.com)

