

THE RANCID TRUTH ABOUT OMEGA-3 FISH OIL

FACTS ON FRESHNESS, FISH OIL AND YOUR HEALTH

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Most people would never dream of buying old fish for dinner. Yet, millions of Americans consume rancid fish oil every day in the form of omega-3 supplements.

It's the great "cover up" of the omega-3 industry - many fish oil manufacturers conceal the poor quality of their oil by packing it into capsules or adding strong flavors. And most companies never report the oxidative status of the oil. Even though most consumers are not aware that they are consuming a poor quality omega-3 product, the rancid oil has an effect. At best, the poor taste and smell reduces consumer compliance, making it difficult to get an effective dose every day. At worst, the oxidation of the omega-3 can cause toxic by-products that counteract the benefits of omega-3 fish oil, and could even be harmful to the body.

Read on for the basic facts about freshness and fish oil.

The Quick Facts :

- 95 percent of tested fish oil brands don't meet industry standards for freshness, stated a recent Norwegian study.
- In plant and animal studies, consuming rancid oil increased the amount of fat in the liver, affected proper cell division, and led to cell death.
- Most the fish oil used in omega-3 supplements comes from Peru and Chile, produced on equipment not approved for the production of human foods.
- Omega Cure ranked as the freshest omega-3 fish oil in a study by the Norwegian magazine Science and Reason.

Rancidity: A Rampant Problem

Until recently, very few studies have examined the freshness of omega-3 fish oil products on the market. Somewhere between the discussion of purity and proper EPA/DHA* levels in the oil, freshness fell by the wayside.

In Scandinavia, however, new studies are starting to examine the quality of different omega-3 fish oils. The results are dismal. A study conducted in 2010 by Nofima, Europe's largest institute for applied research within the fields of fisheries, aquaculture and food, revealed that the vast majority of omega-3 fish oil supplements are rancid. Of the more than 100 brands tested in the study, half could not even be tested because of they contained excessive amounts of added substances. Of the 56 products that were passed on for inspection, 95 percent did not meet industry standards for basic consumption (1,3)!

Why is Rancidity Such a Big Problem?

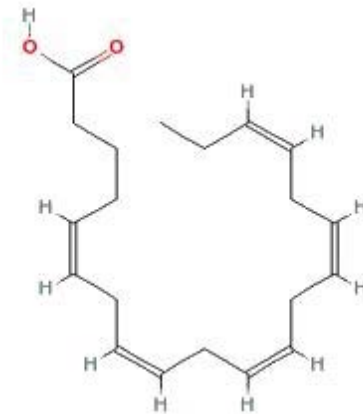
Benjamin Franklin's famous quote: "guests, like fish, begin to smell after three days" is true- especially when it comes to the fish. Just like other perishables such as milk or meat, fish and fish oil become rancid over time. The more exposure the oil has to heat, light and oxygen, the faster the oil begins to decompose. As the oil decomposes, it releases the turpentine taste and smell we know so well.



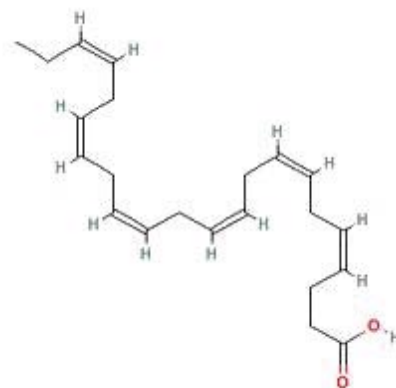
But unlike other perishables, fish oil is even more liable to spoil. The five or six double bonds that give the omega-3 molecules their powerful health benefits, also make them more susceptible to be destroyed by oxygen, heat and light than virtually any other food (1).

The fish oil's natural composition, coupled with poor practices within the manufacturing, storage and transportation of fish oil can create an inferior product even before it reaches the consumer.

Eicosapentaenoic acid



Docosahexaenoic acid





When Rancidity Begins

The oxidative warfare starts from the time the fish is harvested. In many parts of the world, large factory-type fishing ships drag huge nets behind the boats, keeping the fish captured for hours before the nets are eventually gathered in. During this time, the fish struggle for freedom and become stressed. This stress starts an enzymatic breakdown in the fish tissue before the fish is even pulled onto the boat to be slaughtered.

In Norwegian waters, fishing takes place on a smaller scale, and since fish is one of Norway's main exports, the industry is highly regulated. Fish caught off the coast of Norway are quickly processed in cold air temperatures, achieving low rancidity levels. Strict rules regarding this time factor are part of Norwegian fishing regulations (2).

Although many brands market their oil with pictures of Norwegian fjords and flags, in actuality much of the fish oil comes from South America or from off the coast of Africa. Only the detoxification and deodorization process occurs in Norway (3).

In these southern countries, the fishing practices are often not as strictly regulated and are done under tropical temperatures. Moreover, depending on how the oil is transported from South America or Africa to Norway, the oil may be subject to even greater rancidity breaches (1).

In the processing plant, time and temperature are crucial parameters affecting freshness. In many cases, vats of oil are left in poor storage conditions, which contributes to further putrefaction.

Capsules and Flavoring: The Great Cover-Up

Low-quality fish oil, or even high-quality oil that has turned rancid, can be camouflaged. Manufacturers often hide the smell of the rancid oil with thick gelatin capsules or disguise the fishy taste with large amounts of flavoring (4).

Furthermore, capsules often have a higher oxidation value than liquid oils. During encapsulation, heat is applied to the oil as it is being fed, often in open air, to rotating capsule molds. The combinations of heat and oxygen continues to break down the oil, adding to the rancidity problem (1).**

Signs of Rancidity

The best way to tell if an omega-3 fish oil supplement is rancid is to taste and smell it. If the oil is rancid, it will have a sharp off-flavor and a pungent odor. Although capsules escape the old factory and taste buds test, there may be one more symptom: burping. If you burp up fish oil later in the day, your body may be trying to tell you something is awry (3).

Even at the store, you can often tell whether or not the oil will be of good quality. Beware of containers with expiration dates that last for two to three years. Since all fish oil eventually turns rancid, year-long expiration dates indicate that the manufacturer is not concerned about the freshness of the oil.

Measuring Rancidity Levels

Oxidation values are the most reliable measures of rancidity. The higher the oxidation values, the more rancid the oil. The three most common measures of rancidity are peroxide, anisidin and TOTOX values.

While everybody agrees that rancidity is a bad thing, there are no clear scientific values defining when the oil has turned toxic (6).

When marine oils oxidize, they create new by-products not existing in the fresh oils. These by-products have different characteristics and are measured in three different ways.



Measuring Oxidization of Marine Oils

Primary oxidation

The substances produced in stage one - hydroperoxides - do not have a noticeable color, smell, or taste. They are measured using peroxide values (PV).

Secondary oxidation

The hydroperoxides from the primary oxidation stage begin to breakdown and become a new substance called low molecular aldehydes. This substance gives off the characteristic fishy smell and taste. It is usually measured by looking at anisidin values (AV).

Tertiary oxidation

The substances produced in this stage are relatively stable, meaning they are less likely to breakdown. They are polymer fatty acids. If the oxidation is allowed to run to the end of its cycle, the oil turns solid. This is how old fashioned oil paint works. The substances in this stage are usually created faster in high temperatures during the refining and concentrating of the oil.

Fish oil products that have inflated EPA and DHA levels may look impressive from a pharmaceutical standpoint, but the process of creating them leaves the customers with unwanted oxidized seeds in the oil - creating oxidation molecules (5).

Evaluate Freshness with Industry Know-How

If you are serious about evaluating the quality of your fish oil supplement, or any oil for that matter, demand to know the peroxide value (PV), anisidine (AV), and TOTOX values. But, be aware that these values are like looking at a still photo from a movie, meaning that the oil you have in front of you now may have a much higher rancidity value than that which was initially measured at the processing plant.

High quality, fresh oils should have:

PV values below 2.0 meq/kg.

AV values below 3.0 meq/kg.

The PV levels change over time and AV increases as hydroperoxides create secondary oxidation products. The best way to evaluate the amount of oxidation is to look at these two values in relationship to one another.

If you really want to get down and dirty about rancidity, you'll impress everyone by asking about the TOTOX value. This number allows you to analyze the history of the oil (AV) and its immediate condition (PV).

Here is the formula:

$$\text{TOTOX} = 2 \times \text{PV} + \text{AV}$$

If the TOTOX value is less than 5 meq/kg, that fish oil is a keeper.



Why Freshness Matters

Aside from our instinctive aversion to consuming rancid food products and the uncomfortable side effects, rancid fish oil is also likely to be less effective than fresh oil.

There are few long term studies on the effect of rancid omega-3 products on people. The majority of the studies have been done using plant-based oils and the oxidation level is rarely reported, so it is difficult to analyze the results. However, animal studies have shown that consuming rancid oil increases the amount of fat in the liver. Furthermore, in cell studies, rancid plant oil effected proper cell division (6).

In addition, some human studies have not found a protective cardiovascular benefit normally seen with intake of fish oil. Researchers are now speculating that these inconsistent findings may be because the participants in the research studies were consuming rancid oil. There is also research suggesting that consuming oxidized fatty acids increases the risk for atherosclerosis and thrombosis.

While more research about the potential harmful effects of consuming rancid fish oil is needed, everyone can agree: consuming fresh fish oil is undoubtedly healthier and safer than consuming old, smelly oil.

The Freshness Solution

A follow up study by the Norwegian health magazine, Science and Reason, also tested the rancidity levels of various fish oil supplements. The study found Omega Cure by Omega3 Innovations to be in a class of its own - containing only a 1/100th of the rancidity levels of familiar brands. On average, Omega Cure has a peroxide value of less than 0.1 meq/kg (2).

How is it possible for Omega Cure to have such superior freshness measurements compared to other omega-3 fish oil brands? It's all about quality control from start to finish and speeding up the process of getting the oil directly to the consumer.

The Omega3 Innovations Model

We at Omega3 Innovations take our oil seriously. The omega-3 fish oil used in our products comes from wild cod captured off the north-west coast of Norway, following sustainable fishing regulations. The cod livers are individually inspected before the precious oil is extracted. The oil is purified in small batches under cold temperatures with limited exposure to air and light, ensuring the lowest rancidity levels on the market. When we receive the oil, we bottle it in heavy, inert glass bottles that will not react with the oil, and ship it to the consumer within days.

The consumer is then instructed to store unopened bottles in the freezer to stop further oxidation and to keep the oil they are using in the refrigerator. Moreover, we stress that our customers should finish consuming the contents within five weeks after they open the bottle.

This is why we make the bottles fairly small, in order to make sure that the oil is consumed quickly. Even Omega Cure will turn rancid if left opened and stored for long periods of time in unfrozen conditions.

The freshness in the Omega Cure liquid fish oil is so exceptional, we can add it to our cookies and chocolate. Our products are not only built on the passion we have for fresh omega-3 fish oil, but also by the many years of medical training and research of its two physician-founders.

Now that you have the freshness facts, the choice is yours. How do you want to take your omega-3 today?

[Click Here](#)

The world's freshest omega-3 fish oil will be shipped directly to YOU.



Oil can withstand considerable heating up to 200 degrees Celsius for brief periods, in a vacuum, if it is not oxidized before heating.

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