



Report: Omega-3 fish oil supplements

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Omega-3 fish oils are beneficial for health. But you don't always get the real oil in quality and potency.

We tested the quality of 29 fish oil and fish oil combination supplements. We found 4 products unacceptably oxidised, 5 that didn't meet their label claims, and a huge variation in weekly cost.

Omega-3 - what's the hype?

The potential health benefits of fish oils first received attention in the 1970s when scientists became curious about the low incidence of heart disease among the Inuit Eskimos of Greenland.

Their diets contained a lot of fat, but scientists realised marine (fish) fat was "good" fat because it had high levels of the long-chain omega-3 fats eicosapentanoic acid (EPA) and docosahexanoic acid (DHA), which are essential in our diets (see Fat facts below).



Long-chain omega-3s are incorporated into the membranes of every cell in the body, so they have a wide range of functions.

Heart disease

A World Health Organisation report concluded that the relationship between the omega-3s (EPA and DHA) and heart disease was convincing.

The Nurses' Health Study followed about 80,000 healthy women for up to 14 years. It found that the women with the highest intakes of EPA and DHA intake had a significantly lower risk of both heart disease and strokes.

Controlled clinical trials have confirmed that a steady diet of fish or fish oil supplements works as "secondary prevention", reducing the likelihood of a repeat heart attack in people who have already had a first attack.

A recent Food Standards Australia New Zealand review has concluded that the evidence for a benefit of EPA and DHA on heart disease is probable. Therefore there's sufficient evidence to support a general level health claim on food products.

Arthritis and joint mobility

Omega-3s are a potent anti-inflammatory. They may support joint comfort, mobility and flexibility - and so can be beneficial for arthritis sufferers.

Depression

The brain is about 60 percent fat, and the fat we eat influences its composition. Omega-3s make the membrane more flexible and the cells more receptive to incoming signals.

In 1998, psychiatrist and biochemist Joseph Hibbeln noticed that depression was up to 60 times less common in countries such as Taiwan and Japan (where people eat a lot of oily fish) compared with countries like the US and Germany (where they don't).

But evidence is mixed. In 2002, a Crop and Food Research study in New Zealand found there was a direct link between fish consumption and mental health status. However, two further studies by the same researcher found no relationship.

Vision

Omega-3s are important in the development of brain and visual function in infants, and are also associated with retaining those functions throughout life.

In one study, men with the highest fish consumption (at least two serves per week) were 45 percent less likely to have age-related macular degeneration, which is the biggest cause of blindness and severe visual impairment in older people.

Fat facts

All fats and oils are a mix of fatty acids - saturated, trans, monounsaturated and polyunsaturated. But one type usually predominates in each oil or fat.

Omega fatty acids are polyunsaturates that are essential for health - the body can't make them, so you need to include them in your diet. They have many actions, which include lowering total and LDL cholesterol, and reducing your risk of heart disease.

There are two types of omega fatty acids.

- **Omega-6** is found in the oils of seeds and grains, like sunflower and corn oil.
- **Omega-3** is found in seafood, and in some plants such as flaxseed and walnuts.

Too much omega-6 suppresses the action of the omega-3s. So it's important to include enough of the omega-3 long-chain fatty acids **eicosapentanoic acid (EPA)** and **docosahexanoic acid (DHA)** in the diet.

These fats are found mainly in marine (fish) oils, and they are vital nutrients required by every cell in the body.

Recommended intakes

The [Ministry of Health](#) recommends that an adequate intake is 90mg of long-chain omega-3 per day for women and 160mg for men. Men are bigger than women so they have a higher requirement.

But that's a baseline, for "healthy" people.

To help reduce the risk of chronic disease (especially heart disease), it recommends 430mg per day for women and 610mg per day for men. This is in line with the American Heart Association (AHA) and British Nutrition Foundation, both of which recommend consuming 500mg to 1000mg per day.

However, for people who have a recent history of heart disease anything much under 1000mg may not be enough.

The evidence of fish oil's protective powers is so strong that the [National Heart Foundation](#) advises



people after a recent heart attack to consume "about" 1000mg. It's unlikely you could get these levels from diet alone - and this makes omega-3 one of the first dietary supplements to be endorsed by a major health organisation, for treating or preventing a disease.

Be careful, though. Excessive amounts of omega-3 could increase the risk of bleeding, so keep your daily intake below 3000mg.

People taking blood thinners, such as daily aspirin or warfarin, should check with their doctor before taking supplements or eating lots of omega-3 fortified foods.

Real food

Some people don't like taking supplements and you can't beat real food for getting your daily intake of omega-3s.

Getting your omega-3 from food

Food	Price	
	Omega-3 content (mg)	(\$)
SALMON FILLET (150G)	4700	4.05
JOHN WEST PINK SALMON (79G, 1/2 CAN)	1500	1.60
SNAPPER (120G)	1117	3.60
GURNARD (120G)	567	2.40
TARAKIHI (120G)	499	2.52
HOKI FILLET (120G)	492	2.40
LEMONFISH (120G)	387	2.40
SEALORD TUNA IN SPRING WATER (92G, 1/2 CAN)	370	1.23
TIP TOP UP OMEGA-3 DHA BREAD (2 SLICES)	121	0.36
ANCHOR VITAL OMEGA-3 MILK (200ML)	100	0.68

Seafood is one of the main dietary sources of omega-3. The omega-3 content varies widely between and within different species depending on factors such as age, environment, season and the tissue being tested.

Oily fish such as salmon have the highest levels. Just eating one 150gm piece of salmon per week can give you 4700mg of omega-3 - that's even more than a man's weekly suggested dietary target.

Packaged and pre-prepared fish and seafood products, including canned and packaged salmon, sardines and herrings range from 358 to 9200mgs per 100gms.

Not a seafood fan? You can now buy bread, milk and dairy products with added omega-3s (see table above).

Past concerns with omega-3 fortified foods were that the oils could become oxidised, making the food

taste and smell rancid. As a result, the food industry has developed a new way to protect the oil. The omega-3s are now microencapsulated in protective edible proteins or carbohydrates, which prevents the oils oxidising and the taste and smell changing.

Mercury concerns

Mercury occurs naturally in the environment and most seafood contains a small amount of mercury.

Some species (such as shark, swordfish, and fresh tuna) have higher levels of mercury.

Pregnant women need to take particular care, because their developing foetus is potentially more sensitive to the effects of mercury - so they should limit their intake of these species to one serving per week.

Fish oil products and supplements aren't a major source of mercury, and there's no health reason for restricting intake.

About our test

How could we tell which products weren't up to scratch?

Oxidation test

A common objection against taking fish oil supplements is a fishy taste and the "burp" effect, both of which may be signs that the oil has started to oxidise.

Fish oils tend to be unstable, and they undergo oxidation during processing and after encapsulation. Oxidation occurs when the oil comes into contact with oxygen. It's accelerated by the presence of light and heat.

Oxidation is inevitable - but oils shouldn't oxidise to the point of rancidity. Rancid oils will taste and smell horrible. There's also concern that rancid oils may have bad health effects.

We conducted two chemical tests to determine the omega-3s' "peroxide value" and "anisidine value". These values are then combined, to give the overall oxidation value of each supplement.

According to Australian, UK and US guidelines, the total oxidation value should be less than 50. All the supplements in our test complied with these guidelines.

However, scientists and industry groups believe these limits are too high for defining good-quality oil. Even at these values, the oils may be starting to oxidise and become rancid.

More-stringent guidelines

The US-based Council for Responsible Nutrition has produced more-stringent guidelines that many companies voluntarily follow. These guidelines suggest a maximum total oxidation value of less than 30.

Four products in our test (Clinicians Omega-3 1000mg, Efalex, NFS Fish Oil 1000mg and OmegaBrite 500mg) didn't meet these more-stringent guidelines.

Laurence Eyres, Director of Food and Nutrition at Auckland University, takes an even stronger position. He thinks the maximum total oxidation value should be less than 10.

Best-before dates

The older the oil is, the more likely it is to be rancid.

Most of the products in our test had a best-before date of 2008 or 2009. Thompson's Omega-3 Fish Oil 1000mg even had a best-before date of 2010. Best-before dates are a worry, because you've got no way of knowing how old the oil is.

We'd like to see a packed-on date - as well as a best-before date - because then you'd know exactly how

old the product was. We'd also like the best-before date shortened to one year after manufacture.

Fatty acid test

We tested the percentages of EPA, DHA and total omega-3 fatty acids in the supplements (see [Fat facts](#) for more on these).

Overall, most of the levels were within acceptable ranges.

There were some exceptions. Either the EPA or the DHA in Good Health, Healtheries Fish Oil Omega-3, Oils for Life, and both Thompson's products was lower than stated on the label. This means you aren't getting the amounts of good oil you think you're getting.

Don't rely on the "total fish oil per capsule" stated on the label.

A claim of "1000mg of total fish oil" is meaningless if the fish oil is from a species low in omega-3. It's more useful to know the total omega-3 content. The amount of omega-3 oil in each of the products we tested ranged from 12 to 69 percent.

Some labels don't give the total omega-3 content per capsule. We'd like to see this clearly stated.

Dietary supplements regulations

Fish oil supplements are covered by the Dietary Supplements Regulations. The regulations require proper labelling, but there's no auditing of a manufacturer's processes. There's also no register of products.

Our test adds to the argument that New Zealand needs to have more stringent regulations for dietary supplements. Across the Tasman, dietary supplements must meet appropriate standards of safety and quality. All products must be registered and manufacturers licensed.

Parliament is considering the Therapeutic Products and Medicines Bill, which will harmonise the regulation of dietary supplements in New Zealand with the stricter Australian regime. We support the proposal to ensure consumers have access to quality and safe products.

Price and dose

We worked out the number of capsules an adult man or woman needed to take, to achieve the Ministry of Health's suggested dietary targets for long-chain omega-3.

Depending on the particular product, you'll need to take between one and seven per day (see [Test results](#)).

In some products, this number of capsules is different from the number (or range of numbers) mentioned on the label.

For example, NFS Fish Oil 1000mg recommends one to six capsules daily. But we found that you only need to take one per day - whether you're a man or a woman. If you take six, you'll be paying six times more than you need to.

There are big differences in price between the different brands.

Four products (Blackmores Anti-inflammatory Fish Oil 1000mg, Nutralife Omega-3 Fish Oil 1000mg, Nutralife Odourless Omega-3 Fish Oil 1000mg, and NFS Fish Oil 1000mg) will cost a woman less than \$1 a week. And, because their omega-3 is more concentrated than some other brands, there's the convenience of only having to take one capsule per day.

Some brands will set you back more than \$10 per week.

Efalex and Efamol Efamarine were the two most expensive products in our test - they'd cost a man



around \$17 per week or a female around \$10 per week.

Test results

Product	Woman			Man		
	Omega-3 content (%)	Pills per day	Price per week (\$)	Pills per day	Price per week (\$)	Best before Date
★ ★ ★ TOTAL OXIDATION LESS THAN 20						
✓ BLACKMORES ANTI-INFLAMMATORY EVENING PRIMROSE OIL 500MG + FISH OIL 500MG	20.7	2	4.67	3	7.00	06 09
EFAMOL EFAMARINE 1.1G	12.1	3	10.19	5	16.99	04 09
✓ HEALTHERIES OMEGA ADVANCED PURE SALMON OIL 1000MG	23.6	2	4.36	3	6.53	01 09
HEALTHERIES FISH OIL OMEGA-3 1000MG	35.8 A	1	2.27	2	4.53	12 09
✓ KORDEL'S EVENING PRIMROSE OIL PLUS MARINE FISH OIL 1000MG	18.6	2	4.55	3	6.83	09 09
✓ KORDEL'S OMEGA-3 MARINE FISH OIL + E 800MG	33.4	2	5.13	2	5.13	03 09
✓ NORDIC NATURALS PRODHA 500MG (STRAWBERRY FLAVOUR)	68.7	1	4.33	2	8.66	08 08
✓ NORDIC NATURALS ULTIMATE OMEGA 1000MG (LEMON FLAVOUR)	64.4	1	6.90	1	6.90	04 09
✓ B RED SEAL ULTIMATE OMEGA OIL 1200MG	27.8	1	1.94	2	3.87	06 09
✓ SOLGAR OMEGA-3 "700" 1200MG	64.7	1	6.86	1	6.86	06 09
OILS FOR LIFE OMEGA-3 CONCENTRATE 1000MG	36.7 A	1	2.33	2	4.67	05 09
★ ★ TOTAL OXIDATION 20 TO 30						
BLACKMORES ANTI-INFLAMMATORY FISH OIL 1000MG	39.5	1	0.70	2	1.40	05 08
EYE Q EPA-RICH MARINE FISH OIL & VIRGIN EVENING PRIMROSE OIL 500MG	30.3	3	8.93	4	11.90	01 09
GOOD HEALTH OMEGA-3 HEART GUARD 1000MG	34.4 A	1	1.70	2	3.40	05 08
MICRO GENICS NATURAL FISH OIL OMEGA-3 1000MG	36.3	1	1.29	2	2.58	05 09
NATURE'S OWN OMEGA 3 FISH OIL 1000MG	40.5	1	1.05	2	2.10	06 08
NATURE'S OWN OMEGA 3 ODOURLESS FISH OIL 1000MG	37.4	1	1.33	2	2.66	06 08
NFS FISH OIL HIGH POTENCY 1200MG	43.2	1	1.05	1	1.05	07 09
NUTRALIFE OMEGA-3 FISH OIL 1000MG	43.6	1	0.79	1	0.79	07 08
NUTRALIFE ODOURLESS OMEGA-3 FISH OIL 1000MG	38.2	1	0.91	2	1.81	07 08
PRO-LIFE WILD DEEP SEA OMEGA-3 1000MG	38.9	1	1.05	2	2.10	05 09
RADIANCE OMEGA-3 FISH OIL CONCENTRATE 1000MG	37.2	1	1.26	2	2.52	08 09
THOMPSONS OMEGA-3 FISH OIL 1000MG	33.3 A	1	1.33	2	2.66	02 10
THOMPSONS OMEGA-3 SALMON OIL 1000MG	33.7 A	1	2.73	2	5.46	09 09
YOUR HEALTH ENTERIC COATED OMEGA-3 FISH OIL 1100MG	56.1	1	3.36	1	3.36	11 07
★ TOTAL OXIDATION 30 OR GREATER						
CLINICIANS OMEGA-3 1000MG	36.5	1	1.52	2	3.03	06 08
EFALEX	17	5	12.53	7	17.54	09 08


Guide to the table

Our test was conducted by an independent laboratory in New Zealand.

 = We recommend

Products

Listed alphabetically, within "star" ratings.

 = Budget buy

Omega-3 content

A Has less EPA, DHA, (see [Fat facts](#)) or total omega-3 than stated on the label.

Price per week

Based on what we paid per container. Larger containers may be more economical.

Pills per day

Based on the Ministry of Health's suggested dietary intakes for men and women.

We recommend

Recommended products

These oils had the lowest levels of oxidation. Their levels of omega-3 were as claimed on the label and they cost a man or woman less than \$10 per week. See [Test results](#) for more information.

- Blackmores Anti-inflammatory Evening Primrose Oil 500mg+Fish Oil 500mg
- Healtheries Omega Advanced Pure Salmon Oil 1000mg
- Kordel's Evening Primrose Oil plus Marine Fish Oil 1000mg
- Kordel's Omega-3 Marine Fish Oil + E 800mg
- Nordic Naturals ProDHA 500mg (strawberry flavour)
- Nordic Naturals Ultimate Omega 1000mg (lemon flavour)
- Red Seal Ultimate Omega Oil 1200mg
- Solgar Omega-3 "700" 1200mg



Best budget buy

Red Seal Ultimate Omega Oil 1200mg



Our advice

- Include seafood in your diet. As well as being a good source of omega-3s, it's high in protein and low in saturated fat.
- Don't buy fish oil supplements that are nearing their best-before date.
- We'd like to see fish oil supplements with a packed-on date - and with a best-before date that's no more than one year after manufacture. Then we'd all know how fresh the product was.
- Don't buy supplements from retailers that store them under bright fluorescent lights. Some retailers store their fish oil supplements in the fridge, so buying from these retailers is a good bet.
- Store your supplements in a cool dark cupboard or keep them in the fridge.
- People taking blood thinners, such as aspirin or warfarin, should check with their doctor before taking supplements or eating lots of omega-3 fortified foods.
- The current Dietary Supplements Regulations are inadequate for ensuring products meet quality standards. We support the harmonisation of regulations with Australia.

More information

- National Heart Foundation www.heartfoundation.org.nz
- NZ Food Safety Authority www.nzfsa.govt.nz

- The Omega-3 Centre www.omega-3centre.com

More from consumer.org.nz

- [Extra-virgin olive oil](#)
- [Cooking oils](#)
- [Fat quiz](#)
- [The Truth About Food](#)
- [RDI calculator](#)

Report by **Belinda Allan**

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