

Clarification of the misconceptions surrounding
Omega-3 and the importance of fatty acids.



*Omega-3 fatty acids,
I need them*

Free brochure
for those who want to make
considered nutritional and
health choices.

TEST YOUR BASIC KNOWLEDGE

What do you know about Omega-3 fatty acids?

Reply using **CORRECT** or **INCORRECT**.



A summary of correct answers, with explanations, can be found starting on page 3.

QUESTIONS

1. What should I choose? Omega-3 or Omega-6 fatty acids? It does not matter providing they are 'Omega' fatty acids.
2. I have rheumatoid arthritis. I can use GLA to minimise inflammation in my finger bones. This Omega-6 fatty acid is derived from oils such as evening primrose oil and borage oil.
3. Oily and semi-oily fish contain large quantities of Omega-3 fatty acids.
4. I don't like fish. Not a problem, because the necessary Omega-3 fatty acids can be derived from flax seed oil (linseed oil).
5. Cod liver oil contains Omega-3 fatty acids but is not suitable for pregnant women.
6. Eating 'real' butter* enriched with Omega-3 fatty acids every day is healthy. I use this butter: as a spread on my sandwiches, to fry meat, in pastry, etc.

(*) as real butter derived from cows milk used to be referred to

QUESTION 1

What should I choose?
Omega-3 or Omega-6 fatty acids?
It does not matter as long as they
are Omega' fatty acids.

Answer: **INCORRECT**

**Our Omega-6/Omega-3-balance
is fundamentally disturbed.**



Our food supply contains too many Omega-6 fatty acids, mainly derived from vegetable oils (safflower, sunflower, corn, sesame, peanut oils), meat, eggs and/or dairy products. The amount of Omega-6 in the average Western diet is approximately 15 times too high. In order to restore the balance we need to take extra Omega-3 fatty acids on a daily basis.

Overconsumption of Omega-6 fatty acids releases substances in the body that cause inflammation. Chronic inflammation is a typical characteristic of auto-immune disorders such as rheumatoid arthritis, Crohn's disease, colitis ulcerosa, multiple sclerosis, lupus erythematosus, but also of heart and cardiovascular disease, diabetes and depression. Omega-3 fatty acids inhibit inflammation. Increased use of Omega-3 fatty acids reduces the risk of inflammation. All the more reason to consume a balanced supply of Omega-6 and Omega-3 fatty acids. The Omega-6/Omega-3 balance defines the equilibrium between useful, acceptable inflammations and useless, chronic inflammations that should be avoided.

QUESTION 2

Oily and semi-oily fish contain large quantities of Omega-3 fatty acids.

Answer: **CORRECT**

Oily fish, semi-oily fish and fish oil contain healthy Omega-3 fatty acids such as EPA (eicosapentaenoic acid) and DHA (docosahexaenoic acid).

European health authorities advise us to eat fish (preferably oily fish) twice a week.

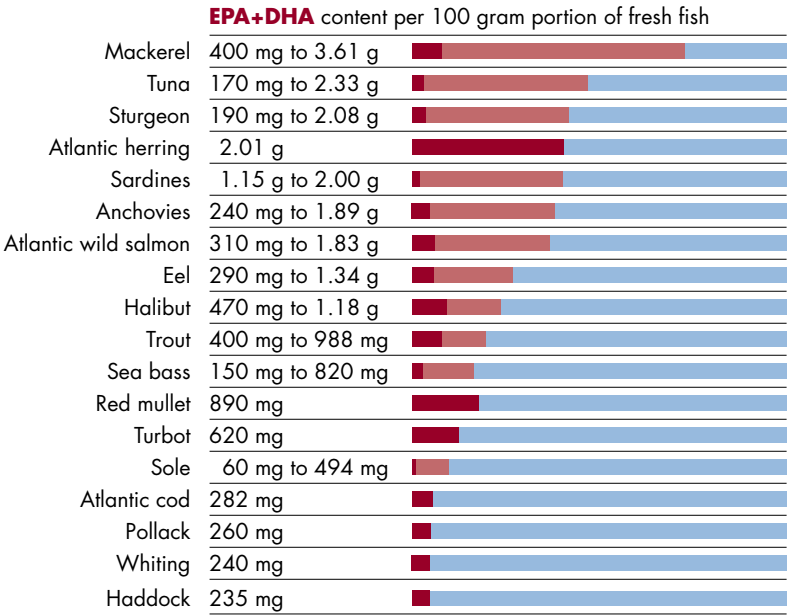
Fish may be polluted with heavy metals (mercury, cadmium, arsenic, lead), pesticides, dioxin, furane and PCBs. These toxic substances are absorbed mainly by the skin and the gills. Always remove the skin from fish to limit your intake of harmful substances.

Smaller fish species (including anchovies, sardines and mackerel) contain fewer harmful substances than larger species.

Some large fish species (shark, marlin, swordfish, king mackerel and tilefish) contain high levels of mercury and should consequently not be consumed during pregnancy or breastfeeding.

Because of the level of pollution pregnant and breastfeeding women should only eat one weekly portion of tuna (fresh or canned), wild salmon and/or herring from the Baltic.

To put it in a nutshell, it is safer to use a carefully controlled fish oil supplement during pregnancy and breastfeeding.



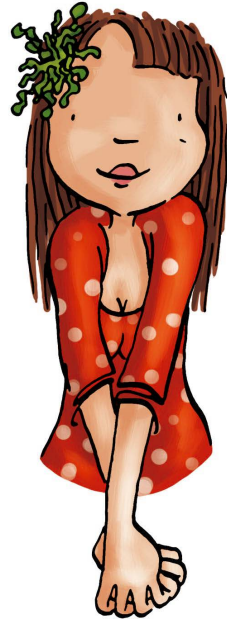
Sources: Circulation 2002; 106:2747-57; Environmental Research 2004; 95:414-28.

QUESTION 3

*I don't like fish.
Not a problem, because the necessary
Omega-3 fatty acids can be derived
from flax seed oil (linseed oil).*

Answer: INCORRECT

Flax seed or linseed oil contains alpha-linolenic acid (ALA), an Omega-3 fatty acid. However, most vegetable oils do not contain EPA or DHA.



Sadly so, because ALA, EPA and DHA are all beneficial for our health. The body tries to produce both EPA and DHA from ALA. The results are not sufficient. Only 0.2% to 8% of the ALA consumed is converted into EPA and a mere 0.05% (or less) into DHA. That is why our diet should include sufficient extra EPA and DHA.

Sea algae are an alternative for people who don't like, or don't want to eat fish. The oils derived from algae are the only vegetable sources of EPA and DHA. Omega-3 fatty acids (DHA in particular) derived from algae are currently also available as a supplement.

*Where can I find the different types of
Omega-3 fatty acids?*

ALA or ALPHA-LINOLENIC ACID

flax seed oil (8.5 g ALA/tablespoon)*, walnut oil (1.4 g/tablespoon)*, rapeseed oil (1.3 g/tablespoon)*, soy bean oil (0.9 g/tablespoon)*, soy products (tofu, tempé, miso, bean sprouts), green leafed vegetables (e.g. purslane, watercress, spinach), parsley, some nuts (e.g. walnuts) and seeds (e.g. pine nuts)

contributes (albeit moderately) to the production of EPA and DHA in the body
> increase consumption of alpha-linolenic acid

EPA or EICOSAPENTAENOIC ACID and DHA or DOCOSAHEXAENOIC ACID

oily and semi-oily fish (salmon, sardines, young herrings, halibut, herring, mackerel, tuna, ...), seafood (lobster, oysters, prawns, ...) and seaweed/sea algae

reduces inflammation > increase consumption of EPA and DHA

(*) Source: Circulation 2002; 106:2747-57

QUESTION 4

*Cod liver oil contains
Omega-3 fatty acids but is not suitable
for pregnant women.*

Answer: CORRECT

Cod liver oil contains EPA and DHA (± 190 mg EPA+DHA per gram of oil). However, this oil also contains large amounts of vitamins A and D. Excessive quantities of these vitamins can harm the unborn baby.



Choose a fish oil supplement that has not been derived from fish liver during pregnancy or the breastfeeding period.

One gram of cod liver oil per day is the maximum quantity to be consumed by people who are not pregnant. This amount of liver oil contains 100% of the recommended daily amount (RDA) of vitamin A and D. One gram of cod liver oil only contains 190 mg EPA+DHA.

QUESTION 5

Eating 'real' butter enriched with Omega-3 fatty acids every day is healthy.*

I use this butter: as a spread on my sandwiches, to fry meat, in pastry, etc.

Answer: INCORRECT

'Real' butter contains saturated fats.



Excessive consumption of saturated fats increases the risk of heart and cardiovascular disease and certain types of cancer. This demonstrates that not all foods enriched with Omega-3 fatty acids are good for you! Ensure that you make the right choice!

Heating Omega-3 fatty acids impairs their quality.

Omega-3 fatty acids are destroyed by heat and exposure to air (oxidation). This definitely occurs during the frying and roasting process!

When oxidised, Omega-3 fatty acids lose their healthy properties and, at worst, could even be harmful.

The oxidation of Omega-3 fatty acids can produce the carcinogenic 4-oxo-2-hexenal.

Use Omega-3 fatty acids with care. Only use these fatty acids in cold dishes.

Store omega fatty acids in airtight conditions (e.g. in capsules).

(*) as real butter derived from cows milk used to be referred to

ALA (alpha-linolenic acid)

Alpha-linolenic acid (ALA) is beneficial for the heart and arteries.

This was demonstrated by the Lyon study. Half of the participants, all heart patients, consumed 2 g of alpha-linolenic acid daily.

The patients' menu was composed of healthy foods and based on the Mediterranean diet: moderate intake of red wine with every meal, low consumption of red meat and animal fats, high fish consumption (fish, seafood), white meat, olive oil, pulses, vegetables and fruit. The other half of the participants stuck to a traditional menu.

The ALA users were less susceptible to heart and cardiovascular diseases such as heart attacks, heart spasms (irrespective of physical exertion), strokes or pulmonary embolism.

The European Food Safety Authority (EFSA) also recognises that a daily intake of 2 grams of ALA benefits the heart and cardiovascular system, more specifically by maintaining a healthy cholesterol level.



Healthy nutritional choices:

FOOD	RECOMMENDED AMOUNT
Extra fat	Use small quantities of unsaturated, added fats (free from trans fats) such as trans-fat free spreads, salad dressings and oil based sauces. Avoid regular use of added saturated fats such as lard, bacon, butter, cream and other full fat dairy products.
Fish	1 or more portions of ± 113 g per week, preferably oily fish.
Fruit	2 or 3 portions of fruit per day (medium size), with sufficient variation.
Pulses	1/2 cup, several times a week.
Meat	Less than 170 g lean, high quality meat per day.
Nuts and seeds	1/4 cup per day
Poultry	Less than 170 g poultry (skin removed) per day.
Refined grains	Limit white bread, white pasta and refined, salted or sweetened snacks.
Vegetables	2 or 3 portions of raw or cooked vegetables per day, introduce sufficient variation (1 portion = $\frac{1}{2}$ cup of raw vegetables or 1 cup of cooked vegetables).
Whole wheat grain products	6 or more portions per day, including whole wheat breakfast cereals, whole wheat pasta, brown bread, brown rice and other whole wheat grain products (1 portion = $\frac{1}{2}$ cup or 1 slice of bread) Fibre rich vegetables such as potatoes or corn can be substituted as an alternative.
Restaurant meals	Observe the above guidelines when choosing your meals; minimise saturated fats and extra calories derived from starters, snacks, bread rolls and puddings.
Alcohol	Consume in moderation (i.e. 2 drinks a day for men and 1 drink a day for women; 1 drink = 1 glass of beer, 1 glass of wine, 1 small glass of spirits).
Drinks	Avoid regular use of sweetened drinks, diluted fruit juices; arrhythmia patients should limit their intake of caffeine (or avoid it altogether).
Water	Listen to your body if you are thirsty; people who consume a lot of fibre would benefit from 2 litres of water per day.

Source: Am Family Physician 2006; 73(2):257-64, 265-8.

**HEALTH OF HEART
AND BLOOD VESSELS**

Studies and recommendations from official bodies have shown that the combination of EPA and DHA is ideal for the health of our heart and blood vessels.

EFSA¹ recommends that those who have never suffered from heart and/or cardiovascular disease should consume at least 250 mg EPA+DHA each day and ISSFAL² is in favour of 500 mg EPA+DHA per day, which is equivalent to one to two portions of oily fish per week.

People with existing heart problems are advised by the European Society of Cardiology (ESC³) to consume 1 gram of EPA + DHA every day. This dose is intended to prevent fatal arrhythmia. The use of EPA+DHA can be combined with cardio aspirin, anti-hypertensive and cholesterol lowering agents. Talk to your doctor.

⁽¹⁾ European Food Safety Authority, 2010

⁽²⁾ International Society for the Study of Fatty Acids and Lipids, 2004

⁽³⁾ European Society of Cardiology, 2003

Some figures:

- A therapeutic dose of at least 2 grams of EPA+DHA is required to tackle increased triglycerides (blood fats). Increased blood pressure requires 3 grams of EPA+DHA.
- Following an assessment of 7803 individuals Dr. Balk concluded that the use of EPA+DHA (2-5 g/day) lowers the triglyceride level on average by 27%.
- In the GISSI study the number of fatal heart attacks in patients who consumed 1 gram of EPA+DHA/day, for a period of 3.5 years, was reduced by 45% when compared to patients who had not taken extra Omega-3 fatty acids. All participants continued to take their prescribed medication at the same time.
- Cholesterol lowering drugs (statins) and EPA+DHA both independently contribute to a lower fatality rate. Calculations showed that for every 248 patients treated with statins 1 life is saved. With Omega-3 supplementation 140 patients have to be treated to save 1 life. EPA and DHA do not lower the cholesterol level but make the cholesterol less sticky. This slows down deposits of bad cholesterol (LDL cholesterol) inside the blood vessels.

Your Omega-3 requirement can be established on the basis of a blood analysis. Talk to your doctor. The Omega-3 Index can be calculated from a fatty acid analysis of your blood sample. This index denotes the contribution of EPA and DHA as a percentage of total fatty acids. Individuals with a high Omega-3 Index have a lower risk of developing cardiovascular diseases as compared to individuals with a low Omega-3 Index.

Also the **AA/EPA value** is an important parameter. A lower AA/EPA value correlates with a better balance between pro-inflammatory and anti-inflammatory compounds in your body.



PREGNANCY

Future mothers must meet both their own EPA+DHA requirement and that of the growing baby. To pregnant woman a minimum daily dose of 200 mg DHA is recommended. This extra DHA dose should be consumed in addition to a daily intake of at least 250 mg EPA+DHA. With a history of premature births a dose of up to 1 gram DHA/day can be taken.

The facts:

- Depressive emotions around the 4th month of pregnancy are linked to a low DHA store in the body. Usually this is an alarm signal pointing to a higher risk of developing postnatal depression.
- The use of Omega-3 fatty acids helps to prevent premature births.
- During the last three months of pregnancy DHA accumulates in the baby's brain and eyes. During this period the baby requires approximately 67 mg DHA per day.
- As far as babies are concerned mothers have to be available for breastfeeding at any time. Fortunately babies that received sufficient DHA during pregnancy soon develop a settled sleeping pattern. A better pattern than that adopted by those babies that received a poor DHA supply during pregnancy.
- It takes at least 26 weeks after birth before the mother's DHA store is replenished. Her DHA store was reduced by half (when compared to the first pregnancy quarter) at the time of birth.
- Babies absorb 60 to 70 mg DHA per day via breast milk.



Hypothesis:

It is assumed with a considerable degree of certainty that Omega-3 fatty acids during pregnancy help to prevent allergies in babies. The reaction of one year old babies to skin prick tests with eggs, peanuts, cow's milk, dust mites and cat hair is less intense if their mother consumed Omega-3 fatty acids from the 20th week of pregnancy to birth, when compared to babies whose mother did not take Omega-3 fatty acids.

Babies that receive sufficient Omega-3 fatty acids during pregnancy are less susceptible to food allergies, asthma, chronic coughs or wheezing.

Hypothesis:

Scientists also assume that babies need sufficient Omega-3 during pregnancy to prevent a tendency to obesity.

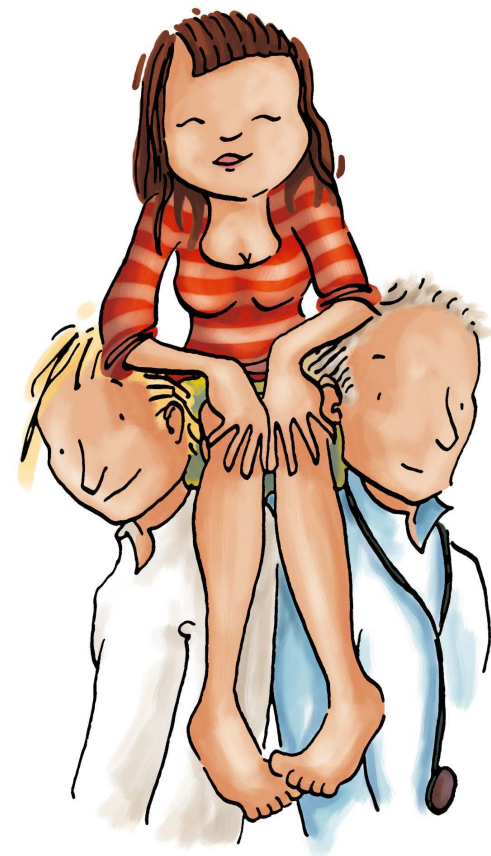
ARE OMEGA-3 FATTY ACIDS SAFE?

A daily dose of up to 5 grams of EPA+DHA is well tolerated.

The European Food Safety Authority (EFSA) considers the long term use of 5 grams of EPA+DHA per day safe in adults. This should be considered the maximum daily dose. With higher doses the blood's ability to clot may be inhibited and lead to undesirable bleeding.

The only known interaction of Omega-3 fatty acids with medication is with anticoagulants, as high doses of Omega-3 fatty acids reinforce their effect. Providing you stick to the maximum daily dose of 5 grams of EPA+DHA, EFSA maintains that the simultaneous use of anticoagulants will not lead to an increased risk of spontaneous bleeding or bleeding complications. Are you taking anticoagulants? In that case it is advisable that you inform your physician if you intend to take Omega-3 supplements to ensure that any bleeding risks are monitored.

Is burping a problem? In that case drink a large glass of cold water when you have taken your fish oil supplement.



Check the quality of the fish oil supplement.

The fish oil capsule may contain undesirable substances such as pesticides, heavy metals, dioxins and furanes. Ask your supplier for a certificate of analysis of the food supplement. The packaging should be labelled with a batch number, which refers to a specific analysis certificate. Providing the values of undesirable substances are below the legally acceptable limits the product can be considered safe.

Check which information you receive. You should receive new analyses for each batch number – not the same piece of paper with the same standard values.

Difficulty making the right choice?

Consult your medical practitioner.

The peroxidation of fatty acids is another important aspect. Peroxidation refers to fats turning rancid. How well have the Omega-3 fatty acids been retained during the supplement's production process?

The peroxide number, for example, (max. 10 meq/kg) will provide a definitive indication.