

Essential fatty acids (EFA)

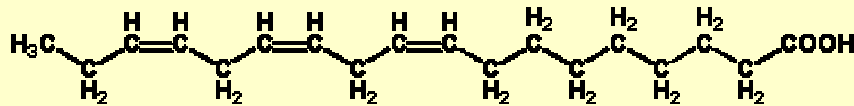
Some fatty acids are essential for the body. It means that the body cannot function without them. As the body cannot synthesize two essential fatty acids, they must be provided by the food:

- omega 3 fatty acids.
- Omega 6 fatty acids

Omega 3 Fatty Acids

Omega 3 is the polyunsaturated fat.

Omega-3 - Alpha-Linolenic Acid (LNA) - is the essential fatty acid in shortest supply. Alpha linolenic acid C18:3 w3



Other omega-3 fatty acids are manufactured in the body using alpha-linolenic acid as a starting point.

These include eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA).

High levels of omega-3 fatty acids are found in oily fish which may explain the low levels of heart disease in populations which eat a lot of fish.

Food Sources of Omega-3 Essential Fatty Acids

Include:

- Flax oil (linseed oil) - the richest natural source
- Flax seeds
- Hemp oil (best balance of omega 6:3)
- Rapeseed oil
- Pumpkin seeds
- Soybean oil (richer in omega 6)
- Walnut oil (richer in omega 6)
- Walnuts
- Oily fish



Essential Fatty Acids in Fish

Fresh oily fish is one of the best and most convenient sources of omega-3 essential fatty acids. It is the one major exception to the need to restrict dietary fat intake for optimum health and weight loss. Unlike other foods rich in omega-3 essential fatty acids, like flax or linseed oil, fresh fish is freely available. And unlike nuts and seeds - the other main food source of omega-3, oily fish is a much richer source.

The omega-3 essential fatty acids in oily fish are called:

Eicosapentaenoic acid (EPA) and, Docosahexaenoic acid (DHA)

See Fig 1. for the content of omega-3 (EPA and DHA) in fresh fish

Essential Fatty Acids in Fish

Fig 1. Content of Omega-3 Essential Fatty Acid in Fish

Approximate Omega-3 (EPA/DHA) content in grams per 100 grams of fresh uncooked fish



Fish (100g)	Omega-3 (g)
Mackerel	2.2
Spiny Dogfish	2.0
Herrings	1.7
Sardines	1.7
Pilchards	1.7
Tuna (bluefin)	1.6
Trout (lake)	1.6
Sturgeon (Atlantic)	1.5
Salmon	1.4
Anchovies	1.4
Sprats	1.3
Bluefish	1.2
Mullet	1.1
Halibut	0.9
Bass (striped)	0.8
Trout (rainbow)	0.6
Trout (Arctic char)	0.6
Mullet (striped)	0.6
Oysters	0.6
Carp	0.6
Squid (short-finned)	0.6
Tuna (skipjack)	0.5
Mussels (blue)	0.5
Periwinkles	0.5
Shark	0.5
Pollock	0.5
Hake (Pacific)	0.4

EPA and DHA

EPA and DHA can be made by the body from the essential fatty acid alpha-linolenic acid (LNA) in flax and hemp oils, but sometimes this capacity is impaired, so oily fish remains the best source.

Richest sources of EPA and DHA fish oils

The richest sources of EPA and DHA are high-fat (10-15 per cent), cold-water fish like salmon, sardines, mackerel, herring, trout and pilchards. EPA and DHA fatty acids make up 15-30 per cent of the oil content of these fish.

- Oily fish containing these important EPA and DHA fatty acids should be eaten regularly - preferably with their skins.
- Fresh wild fish are superior to fish harvested on fish-farms. This is because commercial fish foods contain less vitamin A and C, and less of the omega-3 fatty acids than ocean foods.
- Fresh fish is also superior in omega-3 fat content to frozen or canned varieties.

Omega-3 fish oils and diet nutrition

A diet which includes a regular supply of Omega-3's seems to have several health benefits and no known disadvantages.

Omega-3 can reduce the risk of certain strokes by one-third

A recent study in the Journal of the American Medical Association found that women who ate five or more portions of fish every week cut their risk of having a certain type of stroke by one-third, compared to women who ate fish once a month or less.

It is thought this is because omega-3 fatty acids in oily fish make the blood less likely to clot.

Weight Loss & total fat consumption

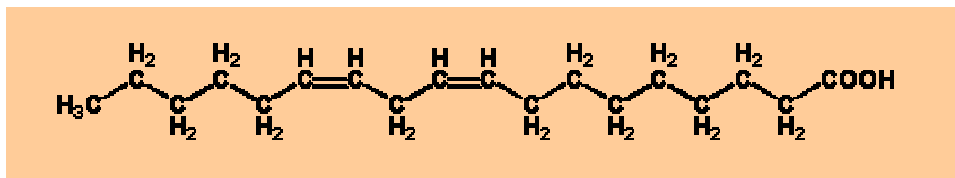
For optimum weight loss, reduce your overall fat/oil consumption to a sensible level: 25-30 percent of calories is very good; although 20-25 per cent is better; while fats expert *Udo Erasmus* advocates 15-20 per cent

Omega 6 Fatty Acids

It is found in polyunsaturated fats.

Omega 6 - Linoleic Acid (LA) - is the essential fatty acid in ample supply.

Linoleic acid C18:2 w6



It is biologically inactive before it is catalysed by our body into other omega-6 fatty acids : gamma linoleic acid (GLA), dihomo-gamma linoleic acid (DHGLA) and arachidonic acid (AA).

According to experts, our current consumption of this fatty acid has doubled from what it was in 1940. Excess intake of omega 6 can cause increased water retention, raised blood pressure and raised blood clotting.

We should **REDUCE** our consumption of omega-6 fatty acids and **INCREASE** our consumption of omega-3 fatty acids.

Food Sources of Omega-6 Essential Fatty Acids Include:

- Safflower oil - the richest natural source
- Sunflower oil
- Corn oil
- Sesame oil
- Hemp oil (best balance of omega 6:3)
- Pumpkin oil
- Soybean oil
- Walnut oil
- Wheatgerm oil
- Evening Primrose oil



Essential Fatty Acids in OILS

Fig 1. Content of Omega-3 and Omega-6 Essential Fatty Acids in Oils

Approximate EFA content in grams per 100 grams

Omega-3s (100g)	(g)	Omega-6s (100g)	(g)
Flax / Linseed oil	58	Safflower oil	74
Flax / Linseeds	15-30	Grapeseed oil	68
Walnut oil	11.5	Sunflower oil	63
Canola / Rapeseed oil	7	Walnut oil	58
Soybean oil	7	Soybean oil	51
Wheatgerm oil	5	Corn oil	50
		Sesame oil	43
		Canola / Rapeseed oil	20
		Flax / Linseed oil	15

Essential Fatty Acids in NUTS

Fig 2. Content of Omega-3 and Omega-6 Essential Fatty Acids in Nuts

Approximate EFA content in grams per 100 grams

Omega-3s (100g)	(g)	Omega-6s (100g)	(g)
Walnuts	5.5	Walnuts	28
Hazelnuts	trace	Hazelnuts	4
Cashews	trace	Cashews	8
Almonds	trace	Almonds	10
Brazils	trace	Brazils	23

Essential Fatty Acids in SEEDS

Fig 3. Content of Omega-3 and Omega-6 Essential Fatty Acids in Seeds

Approximate EFA content in grams per 100 grams

Omega-3s (100g)	(g)	Omega-6s (100g)	(g)
Flax / Linseeds	15-25	Flax / Linseeds	6
Pumpkin seeds	7-10	Pumpkin seeds	20
Sunflower seeds	trace	Sunflower seeds	30
Sesame seeds	trace	Sesame seeds	25

Omega 6:3 Balance

Omega 6 and Omega 3 essential fatty acids are best consumed in a ratio of about 3:1 - three omega 6 for one omega 3.

Most Western diets range between 10 and 20 to 1 in favor of omega 6, which is not good for health. We eat too much omega 6 fat and not enough omega 3 fat.

Essential Fatty Acids - Spoilage

Essential fatty acids turn rancid and go off very quickly. They should be kept away from light, heat and air - they last up to a week or so in the fridge once opened. Also, they are destroyed by commercial processing, so always buy FRESH COLD PRESSED. Finally, pesticides often gather in fats and oils, so buy ORGANIC whenever possible.

Weight Loss & Fats

From a calorie viewpoint, all oils are equally fattening.

They contain 120 calories per tablespoon.

Is omega-3 good for weight loss?

Initial research carried out on Omega-3 indicates that a diet rich in Omega-3 fatty acids helps with weight loss.

Omega-3 seems to help regulate the body's blood sugar levels, which helps keep hunger at bay. In the long term, it is believed that a diet rich in Omega-3 might lower the risk of diabetes and obesity.

Udo Erasmus, the world expert on oils in nutrition, says that omega-3 fatty acids help to increase our metabolic rate thus burning more calories. He points out that while all fats are calorie-dense (9 calories per gram), calorie-counting is not the decisive factor: how easily the calories are burned is more crucial.

Although more research need to be done before we can be sure about the effect of Omega-3 on weight loss, a diet which includes a regular supply of Omega-3's seems to have several health benefits and no known disadvantages.

Omega-3 can reduce the risk of certain strokes by one-third

A recent study in the Journal of the American Medical Association found that women who ate five or more portions of fish every week cut their risk of having a certain type of stroke by one-third, compared to women who ate fish once a month or less.

It is thought this is because omega-3 fatty acids in oily fish make the blood less likely to clot.

Best oily fish includes: salmon, herring, sardines, rainbow trout, eels, kippers and mackerel.

Omega-3 essential fatty acids in vegetables?

Dark green vegetables like seaweed, broccoli, spinach and kale are a reasonable source of omega-3 essential fatty acids if eaten regularly.

Other green vegetables, like spring greens, dark salad leaves, cabbage, Brussels sprouts, & parsley are reasonable sources of omega-3.

EFA's are easily destroyed

Light, air and heat destroy EFAs, so processing and packaging methods are extremely important. Ideally, when buying oils, choose mechanically processed oils in opaque glass containers.

Essential Fatty Acid oils go off very quickly, so should be kept away from light, heat and air. Keep in the fridge once opened (1 week). They are destroyed by commercial processing, so always buy FRESH COLD PRESSED.

Cracked Linseeds

Alternatively, look for 'cracked' linseeds. This type of linseeds (typically 23 per cent omega-3) are neither ground nor crushed, but are split open thereby retaining their active EFA ingredients and reducing the oxidation effects on taste.

EFA's should be organic

Pesticides often concentrate in fats and oils, so it is best to buy ORGANIC whenever possible.