

You have questions about Fats and Your Health?

- Q. Is it true that fats are bad for us?
- Q. Doesn't eating fat make us fat?
- Q. Is it true that we need essential fatty acids in our diets?
- Q. What are PUFAs?
- Q. Is there a difference (as far as the body is concerned) between flax seed oil and fish oil?

Fats and Fatty Acids: Myths, Misconceptions and Facts

for your health from Nutrition Pure and Simple
By Marilyn Sidwell (with help from John W Jones, MD)

Here are answers to help you understand their importance in your Diet.

The other day I came across an article in Time Magazine called *Eat Butter!*. The author, Bryan Walsh, presented an excellent expose' on the many misconceptions about how bad fats are for you. He also cited the numerous studies over the years which disprove the 'Fat is Bad for You' approach. In fact, eating foods with fat content, including saturated fats, can be *beneficial*, especially when compared to the health hazards of a high carbohydrate diet. FYI: there is a major health hazard in a very low fat diet. You *can* become deficient in fatty acids which are necessary to your good health.

Bryan makes an excellent point. You will eat SOMETHING. Consider the consequences of the dietary shift away from fats and fat-containing foods. You now tend to eat flour (bread and low fat crackers and snacks), grains and sugar! The food pyramid has been modified. Government food programs follow new guidelines. Here is a Fact for your consideration: High carb diets make us fat and have been PROVEN to lead to Obesity and type II Diabetes and many other health problems.

This orchestrated attempt to get us to remove fat from our diets - in the name of health (of course) began in the late 1970s. Yes, some fats are bad for you. Trans fats, which are shown on the label of processed foods, should be avoided. And there are fats which change their structure when heated to a high temperature - which is why you are urged by Nutritionists and Dietitians to avoid fried foods.

Many Problems Arise from the 'Fat is Bad' Dietary Approach

One problem with this overall attempt to remove fat and fatty foods from our diets is that most fats (fatty acids) are healthy (like Olive oil). Coconut oil, a saturated fat, had been nearly banished. I am grateful that it is gaining in popularity as we learn more about the benefits of this oil. It provides medium (or mid) chain fatty acids (MFAs) which have very important functions in the body. Most notably, MFAs convert easily to ketones which the body *and brain* can easily substitute for carbohydrates to meet energy requirements as well as carbohydrates.

Regardless of your personal eating choices, you need to know that some fats are ESSENTIAL. This means that the body MUST have them, and cannot make them from anything else you eat or any other supplements you take. They ultimately affect every cell in your body - including (but not limited to) the brain, the eyes, neurons, skin and hair. From what you eat they eventually become prostaglandins (you've heard that word, right?)

There are two groups of Fats (Fatty Acids) which are 'Essential'. We call them EFAs

One group is called ω 6 (Omega or Ω). The other is Ω 3 or n-3. (Just a few technical terms for you) A little recognized fact about these two groups of essential fatty acids is that they are *not* interchangeable. An intake of one will NEVER lead to a prostaglandin made by the other.

Besides the broad grouping of fatty acids there are 4 specific ones that are discussed here. These fatty acids are defined as *pre* formed **LC-PUFAs**, or *pre* formed, long chain, polyunsaturated fatty acids. They are the ones that produce magic-like health benefits:

- ω 6 fatty acids - gamma linolenic acid (GLA), and arachidonic acid (AA)
- ω 3 fatty acids - eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA)

Many articles you read about essential fatty acids reference the fact that we have too much ω 6 fatty acid in the diet. They emphasize that you need fish oil for the ω 3 fatty acids.

This information is only partly true.

AA is an EFA and must be consumed for health. It is also true that the typical Western diet provides WAY too much AA. Meat, milk and eggs are the most common rich sources of AA. Diets high in AA and *lacking* in the other EFAs can lead to (or aggravate) problems such as angina, arthritis, asthma, IBS, diabetes, depression, cancer, food allergies, menstrual cramps, MS and thrombosis - very common problems doctors deal with every day.

GLA, the other ω 6, is also essential, and most fish oil supplements do not include it (except for Opti-PUFA and its predecessor, Samolinic) The common sources for the GLA LC-PUFA are Borage, Black Currant seed and Oil of Evening Primrose.

We know that there are health consequences from the addition or lack of these specific PUFAs in our daily diets. For instance: We always emphasize how important it is for a pregnant mother to have an adequate supply of GLA, EPA and DHA. *Right - she will have enough AA*
Did you know that the baby will 'steal' what it needs from her?

It is especially important that she have these very important EFAs during the last 3 months of gestation and the first 3 months of the baby's life (assuming that she is nursing the baby) - because this is when the baby is having rapid brain and retina formation . And a LC-PUFA deficiency in mama can lead to post partum depression.

Dr David Horrobin stated that a pregnant lady can lose up to 10% of her brain weight.
Wow, what kind of a setup is that for post partum depression?

Outside of pregnancy, If your body is low in prostaglandin PG1 as a result of low GLA you will likely suffer from problems such as asthma, high cholesterol, eczema, hyperactivity, hypertension, PMS, thrombosis and vascular spasm. More of the problems seen by doctors.

The Benefits of Fish Oil

There is a lot of literature on the benefits of fish oil - the major food source of EPA and DHA. A deficiency of the PG3 prostaglandin from lack of these prostaglandin precursors leads to problems such as acne, dandruff, high triglycerides, learning impairment, auto immune disease, thrombosis, and IBS - and the list goes on.

- A specific deficiency of one of the metabolites - DHA - can lead to ADHD and

cystic fibrosis.

- A deficiency of EPA can lead to Schizophrenia, Biopolar depression and severe depression in people with a genetic predisposition for these conditions. In fact, supplements high in EPA are used to help the brain return to normal function.

There is a common misconception about flax seed oil, a w3 fatty acid. Studies have shown that only 2% of this 'parent' w3 oil converts to the LC-PUFAs, EPA and DHA. So if you are suffering from any of the above problems, flax seed oil **can not** be considered as a solution to your problem.

Good fish sources of EPA and DHA are cod liver, salmon, mackerel, tuna, herring and sardine oils. Of course, if you have a health problem such as arthritis, that would benefit from EPA and DHA, you would have to eat these fish daily in order to have enough of the helpful EFAs.

Or, you might just buy a fish oil supplement and take it daily.

A Little History

In the early 1900's scientists noticed that the people (like Eskimos) who ate a lot of food from the ocean did not have the problems of heart disease, arthritis or Diabetes. Nor did they suffer from many other of the problems which come from eating our typical western diet (which is high in AA). The more they looked at the benefits of fish oil. the more problems were identified as a consequence of its absence from the diet.

Some interesting facts for you about the LC-PUFAs.

- GLA converts to the anti inflammatory PG1 prostaglandins
- EPA is for function in the body. This is why it is so often used for Arthritis, Heart Disease and Diabetes
- DHA is for structure. Its use is emphasized during pregnancy and lactation, and for the period of time that the brain and retina of the baby are being formed. More recently, we emphasize its use as people age - to keep the brain structure from shrinking, a common problem in Alzheimer's, and it can prevent or minimize joint malformation in arthritis
- EPA can be converted (the carbon chain elongated) to DHA and vice versa.
- In order to elevate DHA levels in the body it MUST be administered as DHA.
- EPA levels in the body are elevated by the addition of SDA and/or EPA (which is why we continually stress the need for *PRE*formed EPA and DHA)
- Enzymes in the body convert the w6 or w3 oil that you take in. These enzymes, called (Delta) $\Delta 4,5$ and 6, have a preference in the body for the PG3 pathway conversions. One of the benefits of this preference is that the PG3s compete with the PG2 (AA) conversions, helping to achieve a balance in the body from the over-abundance of arachidonic acid. (See, I knew you would not eat less red meat, drink less milk or eat fewer eggs).
- We recommend that you make sure that GLA, EPA and DHA are available daily and let your body sort out what it needs.

Some facts about fish and fish oils.

Fish high in EPA and DHA come from the cold, deep waters of the ocean. These EFAs make it so they can move. Wild game that live through cold winters have lots of these LC-PUFAs in their legs so they don't freeze. *Did you know that?*

The fish you order in restaurants and those available in your market may be farm-raised. That

means they are probably fed the same food as the cattle are given before market. *Can you guess the effect that has?* If they have not been fed fish oil in *their* diet you can expect more AA and less EPA and DHA. In addition, much of the water around the world is heavily contaminated with various toxins, such as PCBs. We checked out a study 'proving' that fish oil is NOT beneficial for heart disease. For that particular study the fish came from the most polluted water in the world - the pollution was the reason there was no decrease in heart disease. Food for thought ...

- You are not going to get an assay of the fish you have for dinner.
- Pregnant ladies in Hawaii are discouraged from eating any of the local caught fish.
- I am not sure how easy it would be to get an assay on most of the fish oil products available in stores - but personally, I would be very suspicious of 'cheap' fish oil.

There is another little known or little understood problem with drugs which block lipoxygenase and cyclooxygenase from AA. Steroids, NSAIDs and other common anti-inflammatory drugs effectively block ALL the prostaglandins. So if you were deficient in the PG1s and/or PG3s to begin with, prostaglandin blockers *ensure* further problems. GLA, EPA and DHA *modulate* the adverse effects of AA, which Dr Jones feels is a much better solution to the problems resulting from our dietary persuasions.

Do you begin to see why it is so beneficial to use a nutritional supplement (from a reliable source) which provides all *three* of the LC-PUFAs that are deficient in our western diets? These three, GLA, EPA and DHA, are *essential*. Don't misunderstand: other oils and other supplements have important health benefits, too.

Many people who are taking only fish oil (or krill or one of the other marine products) show a marked improvement when they include GLA in their daily supplementation. Studies show that GLA enhances the effectiveness of EPA and DHA.

The $\Delta 6,5$ and $\Delta 4$ enzymes which make the metabolic changes to the fat you eat, (ultimately resulting in the prostaglandins), require specific vitamins and minerals along the way in order to elongate the chains. Therefore, it is equally important that you include a good multi vitamin and mineral supplement in your daily diet. Dr Jones formulated Opti-Vites the way he did so as to ensure that there are adequate levels of the nutrients necessary for these specific metabolic processes to occur.

There is one more topic that needs to be discussed.

Much of the very simplified information in this monologue is based on a flow chart we have used since the mid 1980's. It diagrams the steps that the body uses to convert a parent oil into subsequent metabolites and ultimately into prostaglandins. It is by Leo Galland, one of many researchers and authors who have studied EFAs and their effects on the human body.

One of the enzyme steps, so nicely displayed in Dr Galland's chart, is called $\Delta 6$ desaturase. When you ingest a 'Parent' oil, such as flax seed (a w3), or corn oil (a w6), it must be modified by this enzyme in order to become the next metabolite. For a lot of folks, $\Delta 6$ does not work well or is blocked and does not work at ALL. The consequence of this is that, despite your intake of the w6 or w3 parent oil, you end up with a deficiency of a PG1 or PG3 prostaglandin.

Δ6 - Under what circumstances doesn't it work?

If you have a high intake of alcohol, eat lots of saturated or trans fats, and/or if you have deficiencies of B3, B6 and Zinc, the action of this enzyme is stopped. Toxic levels of some chemicals will block this enzyme, as will some viruses.

Other circumstances reduce the effectiveness of the enzyme's ability to do its job. If you are very young (especially premature babies), old (>40), if you are allergic (or belong to an allergic family) or are diabetic, you cannot be sure of your body's ability to make the conversion.

The first w6 LC-PUFA below the Δ6 is GLA and the first w3 below the Δ6 is SDA. From these metabolites the conversion to the PG1 and PG3 prostaglandins seems to flow well.

I know that those following a vegan or vegetarian diet are reluctant to take a fish oil product or eat fish. GLA (w6) comes from a plant. And SDA (w3) is available from plant sources. Existing and novel plant sources are being cultivated and promoted as alternatives to marine-based supplements. These LC-PUFA alternatives tend to be much more expensive.

Opti-PUFA (which takes its name from Long Chain Poly Unsaturated Fatty Acids) is a unique product in the marketplace. The Black Currant Seed oil (GLA) which we use contains a high percentage of Stearidonic Acid. As noted above, SDA is a rare plant source of w3. The fish oils in Opti-PUFA, which provide high levels of EPA and DHA, come from the protected sustainable fisheries of Alaska. Alaska waters are among the cleanest in the world and are not affected by radiation from Japan. The fish oil is then filtered, so there is no remaining fish protein - hence no burps!

Have you noticed that an increasing number of products in the market brag about the fact that they are high in Omega 3 fatty acids? Personally, I think this is great. I hope, though, that the next time you consider buying one of these products you will note that they are not providing EPA or DHA or GLA (unless it says so on the label). They are providing the parent oil - which has to be metabolized by the delta 6 desaturase enzyme.

Because you cannot be sure this enzyme is working for you we stress the importance of using supplements with *PRE* formed Long Chain Poly Unsaturated Essential fatty acids (LC-PUFAs).

Take them - you don't have to be concerned about whether or not your body can make the desaturase conversion.



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