Omega-3 Essential Fatty Acids - THE FATS OF LIFE

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Since their discovery in the 1970s, the Omega-3 Essential Fatty Acids (EFAs) have generated thousands of studies and clinical trials. Essential to life and good health, they protect against disease and can treat illness; yet, few people understand what they are, what they do, and how to ensure adequate intake from food. The two Omega-3 EFAs critical for wellness and prevention in humans are **EPA** (eicosapentanoic acid, a natural anti-inflammatory) and **DHA** (docosahexanoic acid which is "brain food"). The third Omega-3 EFA, **ALA** (alphalinolenic acid), found in flax, nuts, seeds and dark leafy vegetables are poorly converted (<1-2%) to EPA and DHA and thus has questionable value for human consumption.

Changing Diets and Lifestyles

The human diet today is vastly different from that of our ancestors. For early mankind, hunting, fishing, and food gathering were a survival imperative, and, as a consequence, human beings evolved on "natural" foods. These foods supplied a diet that was low in total fat and saturated fat, but contained a balance of Omega-6 and Omega-3 EFAs. For most of the time humans have been on earth, we have eaten foods containing Omega-6 and Omega-3 fatty acids in a ratio of about 2:1. In recent millennia, the emphasis moved away from hunting/gathering towards cultivating the land, but the greatest dietary changes have occurred in the last 50 or so years. As a result of our increasing reliance on cereals, processed foods, and most significantly, vegetable oils and spreads, coupled with a decreased consumption of oily fish and grass-fed meat, today this ratio is at least 10-20:1. Today, modern Western diets are thereby deficient in Omega-3 fatty acids compared with the diet on which humans evolved and their genetic patterns were established.

Getting the balance right

Both Omega-6 and Omega-3 fatty acids are essential, but the body requires them in a ratio that is not normally achieved by the typical diet of today's industrialized nations. Experts think that man evolved on a diet that would have had roughly 1-2 times more Omega-6 than Omega-3 though there is a school of thought which argues for a 1:1 ratio. Currently, average UK intakes are in a ratio of around 8:1 in favor of the Omega-6s; in Australia, nearly 12:1; and, in America at least 10-20:1.
Because of their wide-ranging roles, virtually every area of the human body is susceptible to problems if the balance of the two polyunsaturated fatty acids is disrupted. The point at which this imbalance becomes a problem is not yet known, and in practice, will probably vary from person to person. Nevertheless, it is more than reasonable to assume that general health would be greatly enhanced by the reduction of Omega-6 consumption and the increase of Omega-3 EFA consumption to restore the balance that nature intended.

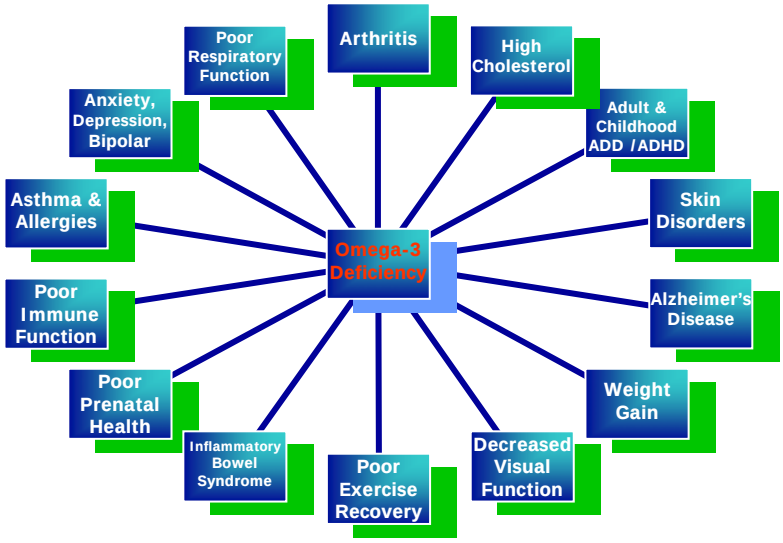
What role do Essential Fatty Acids (EFAs) play in the body?

Like all fats, EFAs provide energy. Their caloric value is similar to other fats and oils, but unlike saturated fats, they have important health roles. In fact, as their name suggests, they are essential **and must be consumed daily** because the body has limited storage for them. Omega-3 EFAs are involved in normal physiology including:

- Regulating pressure in the eye, joints, and blood vessels, and mediating immune response (anti-inflammation)
- Regulating bodily secretions and their viscosity
- Dilating or constricting blood vessels
- Regulating collateral circulation
- Directing endocrine hormones to their target cells
- Regulating smooth muscles and autonomic reflexes
- Being primary constituents of cell membranes
- Regulating the rate of cell division
- Maintaining the fluidity and rigidity of cell membranes
- Regulating the inflow and outflow of substances to and from cells
- Transporting oxygen from red blood cells to the tissues
- Maintaining proper kidney function and fluid balance

- Keeping saturated fats mobile in the blood stream
- Preventing blood cells from clumping together (blood clots that can be a cause of heart attack and stroke)
- Mediating the release of inflammatory substances from cells that may trigger allergic conditions
- Regulating nerve transmission and communication
- Maintaining normal neurological function especially in the brain and retina
- Regulating the formation of new tissue with emphasis on growth and development (prenatal, newborns, and beyond)

Thus, if the diet is deficient in Omega-3 EFAs, the following long-term degenerative illnesses or conditions may result:



In chronic illness, it has been shown that an increase in the Omega-3 EFAs of marine origin can improve a range of conditions, both physical and mental. It is reasonable to postulate that a deficiency of Omega-3 EFAs leading to the above mentioned chronic illnesses may start by eroding vitality, optimism, concentration, and "joie de vivre." Research is continually producing positive findings for these vital nutrients.

How to increase levels of Omega-3 EFAs in the diet

In simple terms, the best and richest sources of the Omega-3 EFAs are oily fish and fish oil supplements. They supply the preferred Omega-3 eicosapentanoic acid and docosahexanoic acid (EPA and DHA) that the body can most readily use. Fish have the advantage of providing a meal, as well as Omega-3 EFAs. However, environmentalists have raised concerns over levels of mercury, PCBs, and dioxins in some fish; the content varies according to location and type of fish. In reputable fish oil supplements, the purification process removes pollutants by adding ethyl alcohol. This converts the Omega-3 to a poorly absorbed ethyl ester form. However, by adding an extra step in the purification process and converting the oil back into the natural triglyceride form (same as in the fish itself), the bioavailability and absorption of the Omega-3s is increased by 300%.

Fish-source supplements are also acceptable to those people who don't eat fish, apart from vegetarians and vegans. Furthermore, most authorities now recommend 1-2 grams of EPA/DHA consumption daily for normal maintenance of good health and 3-4 grams and beyond for those suffering from chronic medical conditions. Thus, it would take huge amounts of daily fish consumption to meet these requirements. It should also be noted that Omega-3 EFAs obtained from sources such as flaxseed and flaxseed oil, canola oil, chia seeds, walnuts and walnut oil, and dark green leafy vegetables (ALA-alphalinolenic acid) are poorly converted (less than 1-2%) to EPA and DHA.

To maintain good health and protect against inflammatory and degenerative disease, fish oil supplementation with EPA/DHA offers real benefits:

- **Convenience (widely available, portable, easy to take)**
- **Measurable dose and dosage options**
- **Availability of non-repeating and super-refined products**
- **Enhanced bioavailability when consumed in the natural/triglyceride form**

In conclusion, a lifetime of good health can be gained from adequate consumption of Omega-3 EFAs ***"FROM WOMB TO TOMB."***