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ADHD Check Engine Light ~ Change Your Oil

Food in our Western diet is very different from what our ancestors ate. One remarkable change has to do with *polyunsaturated fatty acids (PUFAs)*. Primarily ***omega-6*** and ***omega-3***.

PUFAs are considered *essential fats* (or *essential fatty acids*) because we can't synthesize them in our body. We need to get them from food or a supplement. But the primary difference in our diets compared to that of our ancestors is *omega-6*.

This dietary difference is a result of processed foods that contain corn, sunflower, cottonseed, peanut and/or soybean oil.

[Here's a little homework after your done reading this post. Check the labels on your breakfast cereal, bread, baked stuff like cookies and chips, fried foods, salad dressing, mayonnaise, margarine and sauces. And make note of what kind of oil is used.] – highlight text box

Vegetable oil is also used in restaurant fryers because it's cheap and tasteless. Ideal for industrial food. But *the monumental problem with these unhealthy fats is omega-6*.

The issue with excess *omega-6 (linoleic acid)* is that it's a precursor to several molecules including *COX-1* and *COX-2*. When you take a NSAID like ibuprofen, you're *blocking* the effects of *COX-1* and *COX-2*. Which decreases these inflammatory signaling molecules. Resulting in less pain and inflammation.

Here's the problem – too much inflammation caused by excess omega-6's is associated with *brain fog, ADHD, anxiety, memory loss, heart disease, insulin resistance, cancer, hypothyroidism, stroke, headaches, asthma, arthritis, depression, psychosis, and Alzheimer's*.ⁱ

But here's the thing – *omega-3's* which our brain is desperate for, compete with these *omega-6's*. *Omega-3 is a precursor to anti-inflammatory signaling molecules* which go after the inflammatory molecules produced by omega-6.

The good news is twofold – cut back where you can on eating omega-6, and eat more omega-3's. This pushes out excess omega-6 and brings things back into balance.

Your brain and body need this healthy balance of omega-3 and omega-6. Because you need both inflammatory and anti-inflammatory signaling molecules.

The problem with our Western diet is the *omega-6 to omega-3 ratio* is anywhere from *17 and 30 to 1*.ⁱⁱ

Back in the day, our ancestors had a ratio of *4 to 1*.ⁱⁱⁱ And if you lived near the coast and ate lots of fish, the ratio was more like *1 to 2*.

Types and Sources of Omega-3

We primarily use two omega-3 fatty acids; *EPA (eicosapentaenoic acid)* and *DHA (docosahexaenoic acid)*.

But how much omega-3 you get from food depends on the source. And the form of essential fatty acids found in that food.

You can get omega-3 from plants and animals. But each contains a different form of omega-3. For example, animal foods contain EPA and DHA. On the other hand, plants contain ALA (alpha-linolenic acid).

Your body does convert ALA to EPA and DHA. But the conversion process is very inefficient. ALA produces < 5% of EPA and < 0.5% of DHA.^{iv}

Most store-bought beef, pork, chicken and other meats is not a good source of omega-3's because they are raised on feed that produces primarily omega-6.

Vegans and vegetarians are even worse off than meat-eaters when it comes to getting omega-3 from food. Because a plant-based diet provides only ALA. And this includes the common misconception of flax seed oil as a source of omega-3. Your body does a really poor job of converting this ALA to useable omega-3's.

The best sources of omega-3 is cold water fish. Which we'll talk about in a minute.

Love Affair: Your Brain and Omega-3

Your brain loves fatty acids. In fact, it's made up of 60% fat. 15 – 20% of your *cerebral cortex* is *DHA*. Even the retina in your eyes are 30 – 60% *DHA*. Making *DHA* the most essential nutrient for brain and eye health.

[Take your *DHA* supplement before reading this next section. Because *DHA* helps your cerebral cortex and hippocampus encode new memories.] – highlight text box

The highest levels of *DHA* are used to naturally synthesize three well-known nootropic compounds - *phosphatidylserine (PS)* and *phosphatidylethanolamine (PE)*. Lower levels are found in *phosphatidylcholine (PC)*.^v

PS makes up about 70% of neuron tissue mass. This inner cell membrane helps in the storage, release and activity of neurotransmitters and receptors.

PC makes up part of the outer cell membrane. Which helps in maintaining cell structure, fat metabolism, neuron signaling and the activation of a number of enzymes.

PE also makes up part of neuron cell membranes. And is involved in neuron signaling.

PS, *PE* and *PC* are considered *phospholipids (or lipids)*. Working together, and because they are comprised of *Polyunsaturated Fatty Acids*, they alter the fluidity of cell membranes.

This fluidity affects permeability of brain cells, and protein activity. Ion channels for example, depend on *PUFAs* to be incorporated into cell membranes. Needed for neuron signaling. And for the formation of new synapses.

Fish Oil as a Nootropic

Some in the nootropics world would insist that *omega-3's* and *fish oil* don't qualify as a nootropic.

My take is that nootropics simply will not work without an adequate supply of essential fatty acids in your brain.

And the most efficient way of getting enough omega-3's to optimize your brain - is fish oil.

Fish, crustaceans and other shellfish don't actually make omega-3. They get it from eating phytoplankton which are small aquatic plant cells used as food.

The best omega-3 sources are cold water fish like anchovies, crabs, herring, halibut, mackerel, rainbow trout, salmon, and sardines. (The United States Department of Agriculture has a handy reference search engine to check food source ingredients including omega-3 [right here](#)).

The problem with fish in our modern world is contamination from things like mercury, PCB's, pesticides and other nasty chemicals. So what is a neurohacker to do?

Well it turns out that wild-caught Alaskan chinook/king, chum, Coho, pink, and sockeye salmon are the least contaminated fish with high levels of omega-3's. (The Environmental Defense Fund has a handy reference tool found [right here](#)).

Atlantic or farmed salmon rank up there with Big Eye Tuna and marlin as the most contaminated fish. And farmed salmon are higher in omega-6's than omega-3's because of what they are fed.

Best Omega-3 Supplements

So unless you really, really enjoy wild-caught Alaskan salmon and eat it every day. Chances are you're high in omega-6's. And low in omega-3's.

In fact, a meeting at the Hotel Washington called the "*Dietary Guidelines Advisory Committee Meeting*" announced that about 70% of Americans are deficient in omega-3's.^{vi}

Supplementing with a quality omega-3 is the most fundamental step in optimizing your brain. And your best option is to choose a good fish or krill oil supplement.

But which is better? Fish or krill oil?

Fish oil provides DHA and EPA in the form of **triglycerides**. While crustaceans like krill oil provide omega-3's in **phospholipid** form.

Remember, lipids are what your brain cell membranes are made of. So logic says that the phospholipid form of krill oil is more bioavailable than the triglyceride form from fish oil. And it turns out studies prove this to be true.^{vii}

David Tomen, author of [Nootropics Expert](#) recommends a daily dose of 1,000 mg of DHA. This from extensive research and reviewing hundreds of clinical trials.

Tomen says, "Fish oil supplements vary in ratios of DHA to EPA. Salmon naturally contain more DHA than EPA. A supplement from algae may contain only DHA. And Krill oil has both DHA and EPA. So read the labels".

Most brands of fish oil are molecularly distilled to remove all mercury, PCB's and other contaminants.

My favorite is [EfaGold Mega-DHA by Nature's Way](#). 2 softgels contain 1,000 mg of DHA and 400 mg of EPA. The company uses 3rd-party testing to prove their purity. And it's one of the least expensive fish oils on the market.

Your brain designed to run on fish oil. It's a little like the engine in your car. When it's time for an oil change. You don't just dump any old oil in there. You look at the manual. And put in 4 or 5 quarts of the oil recommended by the engine manufacturer.

To get the most out of your nootropic stack. And for a fully-optimized brain. Every stack should start with a high quality omega-3 supplement like fish or krill oil.

ⁱ Mozaffarian D., Pischon T., Hankinson S.E., Rifai N., Joshipura K., Willett W.C., Rimm E.B. "[Dietary intake of trans fatty acids and systemic inflammation in women.](#)" *American Journal of Clinical Nutrition*. 2004 Apr;79(4):606-12.

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ⁱⁱⁱ Kris-Ehrt P.M. et. Al. "[Polyunsaturated fatty acids in the food chain in the United States](#)" *American Society for Clinical Nutrition* January 2000 vol. 71 no. 1 179S-188S

^{iv} Plourde M., Cunnane S.C. "[Extremely limited synthesis of long chain polyunsaturates in adults: implications for their dietary essentiality and use as supplements.](#)" *Applied Physiology, Nutrition and Metabolism*. 2007 Aug;32(4):619-34.

^v Stillwell W., Shaikh S.R., Zerouga M., Siddiqui R., Wassall S.R. "[Docosahexaenoic acid affects cell signaling by altering lipid rafts.](#)" *Reproduction, Nutrition and Development*. 2005 Sep-Oct;45(5):559-79.

^{vi} "[Dietary Guidelines Advisory Committee Meeting](#)" U.S. Department of Agriculture Washington, DC January 28, 2004

vii Schuchardt J.P., Schneider I., Meyer H., Neubronner J., von Schacky C., Hahn A.
“[Incorporation of EPA and DHA into plasma phospholipids in response to different omega-3 fatty acid formulations--a comparative bioavailability study of fish oil vs. krill oil.](#)” *Lipids in Health and Disease*. 2011 Aug 22;10:145.