

Eicosanoid Assessment with AK

Scott Monk, D.C.

Abstract

Eicosanoids are hormones present in each of the 70 trillion cells of the human body. Rather than endocrine hormones, like estrogen and testosterone, traveling throughout the blood stream, or paracrine hormones communicating between cells, eicosanoids are autocrine hormones. This means they work within the cells themselves, each one having its own special role to play. There are currently around 100 known eicosanoids¹ with names such as prostaglandins, leukotrienes, and thromboxanes. All cellular function (which means all human function) is based on these elusive chemicals. The balance between eicosanoids either enhances or degrades health. Most of the top-ten causes of death directly relate to eicosanoid imbalances, including heart disease, hypertension, type 2 diabetes, inflammatory diseases, auto-immune diseases, cancer, depression, and many more.^{2 3 4 5}

Introduction

The things that make us sick are the same things that accelerate aging. The reason this is so is because all diseases and functional imbalances originate from dysfunction in the cells. When cells are stressed, replication increases and total cellular lifespan decreases. Slowing biological aging begins with a strong defense of DNA against inflammatory assault. The main threats come from oxidation-generated free radicals, poor cellular methylation, a skewed nitric oxide system and inadequate levels of good eicosanoids.

Anti-Aging = DNA Protection

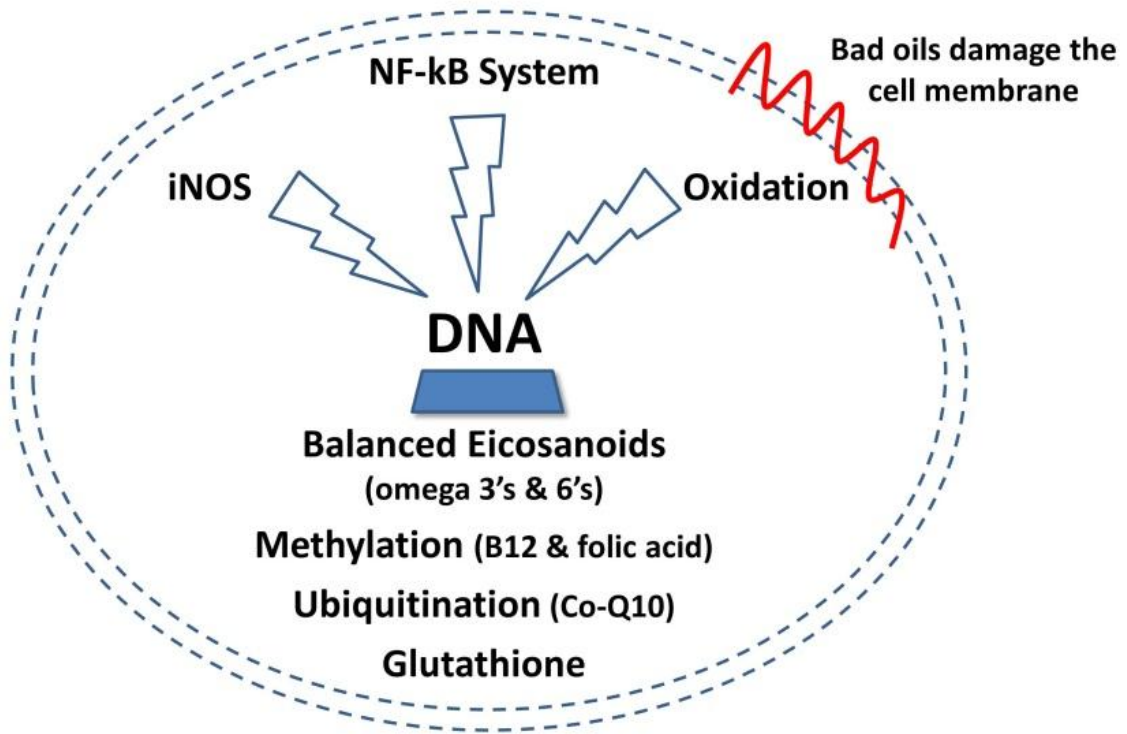


Figure 1: Protecting DNA

All eicosanoids are essential, but under certain circumstances, some are much more important and others more harmful. Therefore, if the operating assumption is that most people are not in perfect health, have some degree of emotional stress, and their diet could use some improvement, then the title of “good” and “bad” eicosanoids becomes applicable.

“Good” Eicosanoids

“Bad” Eicosanoids

Inhibit platelet aggregation	Promote platelet aggregation
Vasodilators	Vasoconstrictors
Anti-inflammatory	Pro-inflammatory
Control cellular proliferation	Promote cellular proliferation
Encourage immune function	Suppress immune function

So how is it possible to manipulate eicosanoids naturally for the benefit of improved function? By understanding how the body makes them. All eicosanoids come from oils called essential fatty acids (EFAs). The irony is that EFAs are useful, or become activated, after oxidization. In other words, the process that damages DNA and creates free radicals, leading to inflammation, is the very same process used to kick-start the production of anti-inflammatory eicosanoids.

It makes good biological sense that oils would contain a key to health and anti-aging. Oil is human soil, or the place from which health springs forth. The brain is 50 percent fats and oils. All the nerves throughout the nervous system have a coating of fat, called a myelin sheath. Fat makes all hormones, whether within the cell itself or floating around the blood stream. Every cell in the body has a bilipid layer, an exterior membrane made of a double dose of fat.

The cell membrane is Grand Central Station. Hormones, nutrients, chemicals of all kinds, and even light waves engage the cell membrane and elicit a response through specific receptor proteins. Cellular biologists believe that there may be more than 100,000 of these proteins, each designed to respond to a precise environmental stimulus.⁶ Without a healthy cell membrane, nutrients do not move in and waste products do not move out of the cell. Keeping the plethora of processes moving efficiently requires a healthy cell membrane, and this is dependent upon access to an abundance of essential oils—the same oils required to make good eicosanoids. Harvesting good eicosanoids and weeding out bad ones must be the foundation of any health rejuvenating or anti-aging program.

Since the early 1980s, researchers have known about eicosanoids and have used oils with mixed results to try to balance their levels for the benefit of health. This is not surprising. The power and success of oils is based upon two important caveats. First, not just any oil will do. Second, the oils used must be ingested in the correct ratios. These ratios can vary from one person to the next, depending on the present state of health. Overall, it is a delicate scale, easily tipped in one direction or another. Overdosing either side, even with good oils, will create problems.

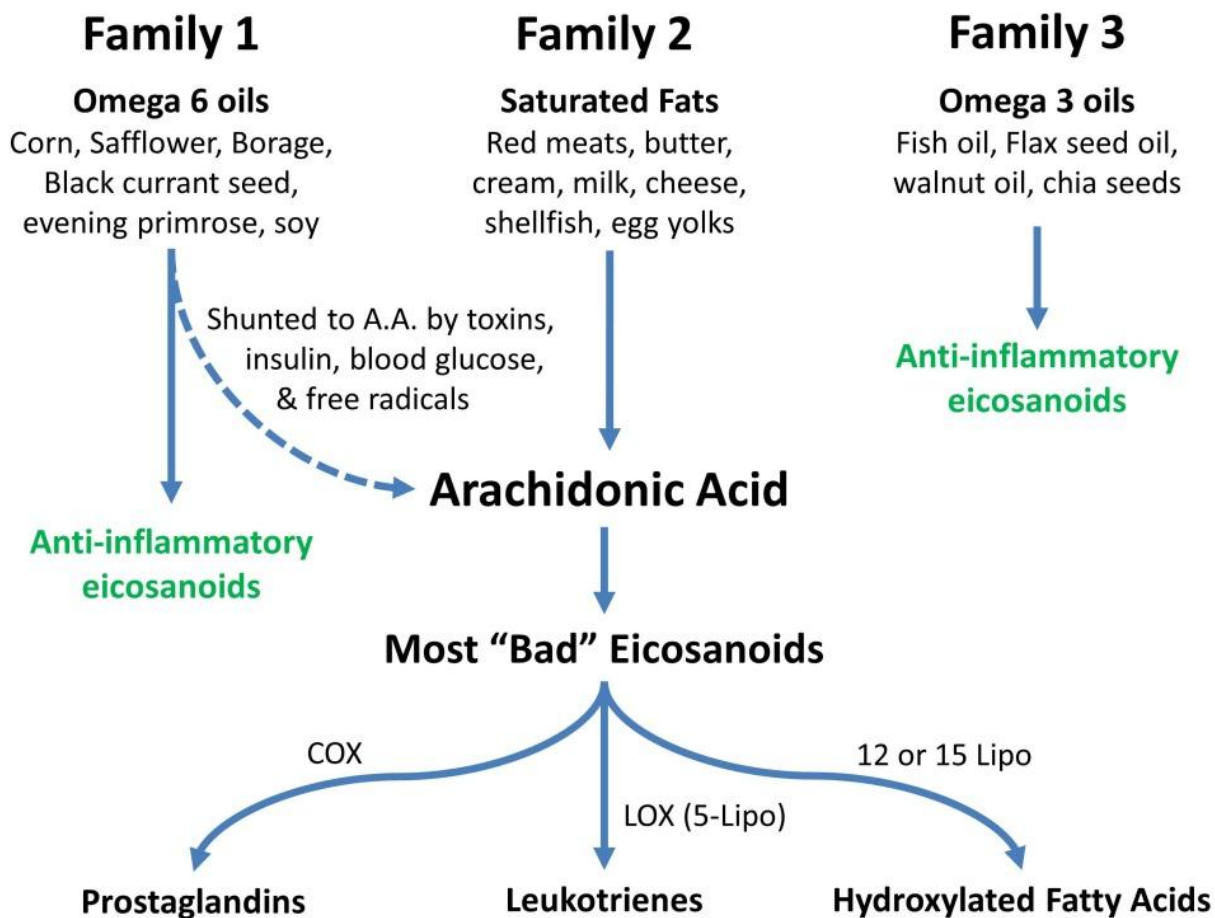


Figure 2: Three Families of Fats

There are three families of oils that can make eicosanoids. Family 1 and Family 3 are where most good eicosanoids come from, while Family 2 produces most bad eicosanoids.

Family 1 is full of omega 6 oils that come from a variety of plants and vegetable-based foods. Family 3 has the omega 3 fats, like fish and flax seed oils. Fish oils have the ability to protect the heart and reduce the incidence of cardiac arrest.^{7 8} They do this by reducing the inflammatory response.^{9 10} However, just taking fish oils is not enough for optimal function. In order for eicosanoids to diminish inflammation, they often need to be present in the correct ratio, balanced against the omega 6 oils of Family 1.^{11 12}

Family 2 are the fats cardiologists want all their patients to avoid, like saturated fats found in red meats, butters, and creams. These fats easily and directly convert into arachidonic acid. While arachidonic acid is critical for brain development in children and has many other important functions throughout life, the eicosanoids from arachidonic acid can make things much worse by increasing pain, constricting blood vessels, and promoting blood clots. This usually occurs when inflammation becomes aggressive.

From the arachidonic acid, three main groups of eicosanoids emerge. The first group is the prostaglandins. These are the eicosanoids whose production is shut down by NSAIDS, like acetaminophen and ibuprofen. They do this by not allowing an enzyme to do its job. Enzymes are like workers on an assembly line. As the protein and fat pieces flow down the line, the enzymes put them together. Drugs like NSAIDS prevent workers from showing up to work. The enzyme responsible for putting together bad eicosanoids is Cyclooxygenase, or COX. NSAIDS are often called COX inhibitors. This may sound like a good idea at first. Who needs enzymes putting together bad eicosanoids anyway? The problem is COX also assembles good eicosanoids, such as the ones that keep the stomach from digesting itself.

Two other eicosanoid groups also come from arachidonic acid: the leukotrienes and the hydroxylated fatty acids. NSAIDS do nothing to help these last two. The pharmaceutical industry is working on a new class of LOX enzyme inhibitors to prevent leukotriene formation. Natural LOX inhibitors, such as curcumin, fish oils, and certain antioxidants, all come from a good diet. However, few in society choose this approach exclusively. If persistent pain is coming from leukotrienes or hydroxylated fatty acids, a common tactic in today's fix-me-now society is to go nuclear.

Steroid drugs, like those prescribed by Rheumatologists, do work to stop pain by shutting off bad eicosanoid production. However, they do more than this. Steroids shut off all eicosanoid function—good and bad. People on steroid drugs often gain weight, become depressed, have trouble sleeping, develop brittle bones, and so on. To reiterate, eicosanoids regulate all human function by controlling cellular function. Shutting the inflammatory and anti-inflammatory

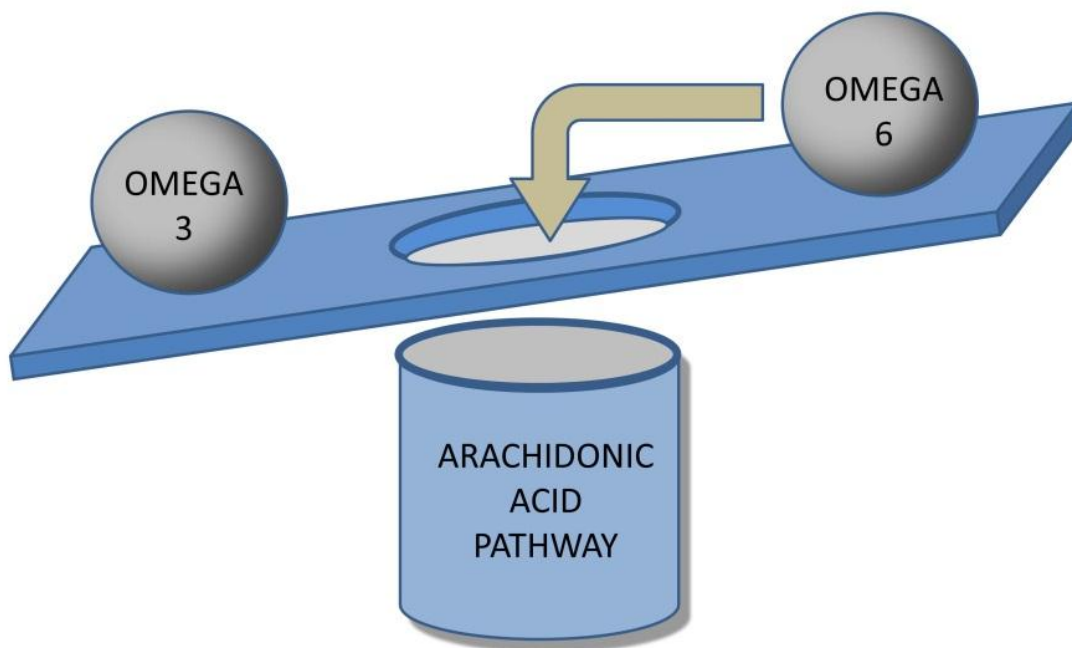
eicosanoids down at the same time with steroid drugs has a negative impact on the whole body. This will not, and does not, end well.

Eat Balanced Amounts of Good Oils

The American diet is full of too many omega 6 oils. All the oils in the boxed and bagged goods of the grocery store are omega 6 vegetable oils. This is undesirable for two reasons. First, these oils are all the same types: corn oil and soy bean oil, mostly. It is never a good idea to eat the same things all the time, even if they are good for you. A variety of good foods is best. Second, oils in processed foods have lost any value they once had due to high heat and exposure to oxygen. High heat changes the molecular structure of the oil, making it poisonous in some cases. Oxygen causes free radical damage, turning the oils rancid.

Besides the two reasons just given, omega 6 oils can easily convert into arachidonic acid with a deficiency of omega 3 oils. This tends to happen in the presence of a blood sugar problem, such as insulin resistance. To balance the teeter-totter, physicians have prescribed heavy doses of omega 3 fish oil. This approach works well at first but soon creates other imbalances. Good eicosanoids come from both the omega 6 and omega 3 oils, not just fish oils alone. Generally, the body wants good sources of both omega 6 and omega 3 oils in order to keep inflammatory eicosanoid levels low. Using both families of oils, along with reducing or eliminating bad fats and heated omega 6 oils is the best approach. However, there are other potholes to watch out for.

Rolling Toward Inflammation



Avoid Bad Fats

Not all fats are equal. Man-made synthetic and processed fats (trans fats) greatly disrupt eicosanoid balance, increase inflammation, and interfere with cholesterol breakdown. As such, people should avoid eating them. The process of partial hydrogenation changes the shapes of natural fats and oils so they interfere with, rather than promote, normal fat metabolism. A study published in the *New England Journal of Medicine* estimates that simply eliminating trans fats from the U.S. food supply could prevent between 6 and 19 percent of heart attacks and related deaths, or more than 200,000 each year.¹³

These processed fats are in nearly everything people buy in the grocery store, from salad dressings to candy bars and from chips to breads. Partially hydrogenated fats and oils block the normal conversion of cholesterol in the liver, causing an elevation of cholesterol in the blood. Margarine, which is often touted for its lack of cholesterol, contains partially hydrogenated fats. One of the biggest cases of misinformation in recent history is the suggestion that eating margarine instead of butter will reduce cholesterol. It is true that butter contains cholesterol and that margarine does not. But, butter also contains high levels of normal fat mobilizing nutrients. It is a whole food designed to take care of its own fats if eaten in moderation. Margarine can actually increase cholesterol levels and heart attacks.¹⁴

Watch Out for Sugar

Some people can eat plenty of Family 2 saturated fat without any evidence of inflammation or its scariest outcome, heart disease. How? Because they don't over-ingest sugars and have normal blood insulin. Saturated fat by itself is neutral or can be anti-inflammatory but not when combined with sugars.^{15 16} Americans love sweets and grease. In the Standard American Diet, saturated fat is rarely unaccompanied by copious amounts of sugar. With each dessert, Americans increase their risk for heart disease,^{17 18} eating roughly 150 pounds of refined sweeteners each year.¹⁹ Too much sugar leads to spikes in the sugar-regulating hormone insulin. This hormone has the strongest influence over the eicosanoids. Too much insulin as a result of too much sugar is the origin of most functional problems. The majority of people, as discussed in the chapter *Hypoglycemia or Histamine*, have a functional blood sugar problem that is pushing them toward life-altering disease.

Sugars with Family 2 fats are bad enough, but to add fuel to the inflammatory fire, simply change Family 2 fats to bad fats. Since 1920, the percentage of dietary vegetable oils in the form of margarine, shortening, and refined oils increased nearly 400 percent while the consumption of sugar and processed foods increased about 60 percent.²⁰ Studies from around the world have consistently demonstrated that in populations where the diet was high in sugar, processed flours, and heated vegetable oils, deaths from all manner of disease, including heart disease, are much higher.^{21 22 23 24 25}

A Final Piece

In the body, everything is about balance between systems: not too hot, not too cold. Avoiding bad oils and consuming good oils is a great start and will pay dividends. However, maximum effect from oils, the kind of effect that helps cure arthritis, eczema, and colitis, results when people consume both omega 3 and omega 6 oils at the same time *in their correct ratios*.

Diagnostic blood tests can determine the levels of EFAs in the body. However, the levels of these oils are different within different types of body tissues. This means that blood tests, as helpful as they may be, still leave many critical questions unanswered.

Which type of omega 3 oil is best: flax seed oil, cod liver oil, or a combined fish oil product? Which type of omega 6 oil is best: black currant seed oil or borage oil? Or perhaps evening primrose oil, wheat germ oil, or some combination of the above? And of course, how much of each? Two fish oil to one borage, or the other way around? Finally, will the patient actually be able to digest all these oils and use them efficiently in the body? The answers to these questions will lay a foundation for health and anti-aging.

AK Assessment

The following 6X biomarkers are necessary to assess the eicosanoids: Prostaglandins, leukotrienes and arachidonic acid. Test kits are available from a variety of sources including www.metabolics.com or www.drmicahellebowitz.com

With the patient free from switching patterns or with GV 20 open, testing can begin.

Step 1: Using a strong indicator muscle (SIM), place the arachidonic acid (AA) vial on the patient or test it over GV 20 and retest. AA usually does not weaken a SIM on its own, but will in combination with another eicosanoid. Assume for now this is the case and continue with the steps.

Step 2: Test both AA and just one of the other eicosanoids: prostaglandins or leukotrienes. On 95% or more of people, the combination of AA along with one of the other eicosanoids will cause a SIM to weaken.

Step 3: Find the oil that counteracts AA + first found eicosanoid. Test different types, one at a time, looking for a negation of the weakness. It could be either an omega 6 or omega 3. In this author's experience the omega 3s show up first roughly 70% of the time. Now there should be three components: AA + first eicosanoid + negating EFA.

Step 4: Using the three components, add in the last eicosanoid. It will cause a SIM to weaken in more than 90% of patients and will be cancelled by the opposite omega form of oil. For example if omega 3 negated the AA + first eicosanoid in Step 3, then omega 6 will negate the second eicosanoid in this step. Now the combination of the right omega 3 with omega 6 has been found to balance the eicosanoids, but a critical piece remains. What is their correct ratio?

Step 5: Only test AA + first eicosanoid to generate a SIM weakness. Now add one pill at a time of the negating omega until strength returns. With omega 3s this may be only one pill. If the omega 6s showed up first however, this author has found that up to three pills are sometimes required.

Step 6: Add in the second eicosanoid to create weakness and then one by one, find how many of the second form of omegas are required to generate strength. You now have the right combination and ratio of oils for the patient.

Step 7: Recheck the eicosanoid pathway every two weeks. If the ratios do not start off at 1:1, omega 3 to omega 6, then they will move that direction quickly. For example, if the ratio is 1:3 omega 3 to 6, in two weeks it will be 1:2 and then two weeks later, 1:1. The oil forms can change as well. The most common long-term oils in a 1:1 ratio are fish oils with borage oil.

Exception: If AA caused a SIM to weaken by itself, continue on to Step 2 by adding in the first and second eicosanoid. One will negate the weakness and one will not. The eicosanoid, which keeps the SIM weak, is the one to use. So now there should be AA + eicosanoid that keeps the SIM weak. Use this combination and proceed on to Step 3 - testing for the negating oil. This author used to find three oils, one for the AA generated weakness, and one for the each of the two eicosanoids. This is not necessary. The AA weakness will be dealt with completely by the proper combination and ratio of the two omega forms.

Note: The assumption has always been that since there are too many omega 6s in the diet, so adding omega 3s only should be sufficient. Patients will in fact test as though they need the omega 3s (they do), but they will probably have trouble digesting and assimilating them because they are not paired with the proper omega 6 oil. The body oftentimes wants good omega 6s in higher doses in order to replace and replenish the abundance of bad omega 6s that are the preponderance of the typical SAD. Once this author discovered this pattern, many chronic inflammatory issues began to quickly resolve.

Conclusion

Imbalanced eicosanoids are the cause of many life-threatening diseases. Keeping the plethora of intra and extra cellular processes moving efficiently requires an abundance of essential oils as a raw material for the eicosanoids. From a therapeutic standpoint, the power and success of oils is based upon two important caveats. First, not just any oil will do. Second, the oils used must be ingested in the correct ratios. These ratios can vary from one person to the next, depending on the present state of health.

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