

# The Scientific Calculation of the Optimum Omega 6/3 Ratio

**WARNING: Everyone is Overdosing on Omega 3—Fish Oil *Decreases* Immunity!**

Analysis of the western diet shows a significant preponderance of omega 6 compared to omega 3—most people’s diets consist of foods that contain approximately twelve times more omega 6 than omega 3. Physicians and nutritionists tell us that we are therefore “overdosed” on omega 6 from our food, while undersupplied with omega 3. This is why they say that we need to supplement with mostly omega 3 EFAs and take few if any omega 6 EFAs. But there are crucial mistakes in this recommendation. **The truth is that we are now actually overdosing on omega 3, and this is a mistake that can make you more susceptible.**

The following article shows how omega 3 in the dosage amounts and types often recommended by physicians and nutritionists, **in particular from fish oil**, will **significantly decrease your immune system response to infection**. This information comes from the proceedings of the International Society for the Study of Fatty Acids and Lipids (ISSFAL) 4th Congress, June 4-9, 2000 in Tsukuba, Japan.<sup>1</sup>

Prepare to be shocked!

“... [S]tudies indicate that at the levels used, **fish oil** [omega 3 derivatives] **decreases a wide range of immune cell responses** such as natural killer cell and cytotoxic T lymphocyte activities, lymphocyte proliferation and production of IL-2 and IFN- $\gamma$  (1,2)...

“... **Recent studies have indicated that relatively low levels of the long chain omega 3 fatty acids** (EPA or DHA at a level of 4.4% of total fatty acids or 1.7% of dietary energy) **are sufficient to bring about some of the suppressive effects** [on the immune system], that **dietary EPA and DHA [omega 3 derivatives] both inhibit lymphocyte proliferation**, and that **dietary EPA but not DHA inhibits natural killer cell activity.**”

---

<sup>1</sup>The report is titled “Omega 3 Polyunsaturated Fatty Acids, Inflammation and Immunity,” by Philip C. Calder, Institute of Human Nutrition, University of Southampton, Bassett Crescent East, Southampton, UK.

These articles reveal that only a relatively small quantity of omega 3 derivatives will give rise to these immune problems. This is an immediate danger to the public, given the recent huge push in the promotion and sale of fish oil capsules (which are mainly omega 3 derivative-based). If you consume **fish oil supplements**, then you will be taking a quantity of **omega 3 derivatives** that is significantly in **excess of the immune-suppressing threshold** amount given in the article above. We therefore **do not recommend taking omega 3 derivatives from a supplement**. You may eat all the fish you desire, but supplement only using the guidelines given below.

**\*\*\* WARNING: Excess Omega 3 in Any Form is Hazardous! \*\*\***

We recommend taking a very conservative amount of **parent** omega 3 and letting your body make its own omega 3 derivatives (from the parent omega 3), as it needs them. Note that we say take a “conservative” amount because overdosing on **parent** omega 3 from flax seed and other parent omega 3-containing oils can *also* be very harmful because, in your body’s effort to rid itself of the overdose, it too will produce more immunosuppressive omega 3 derivatives. (Note that neither Omega 6 nor its derivatives cause this immunosuppressive effect.)

Rather than supplementing with fish oils, we recommend a **plant-based** omega 3 formulation (from various seeds) that contains **parent omega 3 EFAs**, and **NO omega 3 derivatives**.

Prepare to be shocked again! The article continues:

“Supplementation of the diet of healthy human volunteers with fish-oil-derived omega 3 PUFA (1.2-1.4 gm/day\*) results in decreased lymphocyte proliferation, decreased monocyte and neutrophil chemotaxis, decreased production of IL-1, IL-2, IFN- $\gamma$ , IL-6 and TNF, and decreased expression of MHCII and some adhesion molecules on the monocytes...” [all of which are very detrimental to your immune system]. **“This decrease causes increased cellular bacteria and impaired tumor cell killing!”**

**\*This is a very small amount, just a couple of capsules, to cause so much damage.**

Below, in the section, “The Supplement Calculation,” we provide for the first time a thoroughly worked-out scientific analysis of the correct ratios of omega 6 to 3 to supplement with, as well as why very little omega 3—from any supplement source—should be taken!

## How Much Omega 3 and Omega 6 Are We Taking In?

What nutritionists and health commentators are missing is that **most of the omega 6 EFAs in today's foods are ruined**—they are either hydrogenated into transfats, cooked, or otherwise adulterated so they won't go bad on the supermarket shelf.

And just looking at the harmful transfat content alone in commercial oils and oil products doesn't tell the whole story. Analysis of commercial "omega 6" oils show, in addition to lots of cancer-causing, non-oxygenating transfats, the presence of harmful preservatives and additives. Many of these additives and preservatives ruin the oils' oxygen-transfer capability. That's why traditional margarine, with perhaps a 30% transfat content, can still be kept unrefrigerated in the garage for years and no living animal will eat it—nor will it oxidize and become rancid. The remaining 70% *unhydrogenated* oil that supposedly isn't "treated" has *also* lost its oxygenating ability because of preservatives and additives. Even though the oils in margarine started out with lots of healthy EFAs before processing, there is no remaining ingredient in margarine that makes it healthful.

A medical article titled "Who's afraid of n-6 polyunsaturated fatty acids [omega 6]?" was published in 2001, but few in the medical and nutrition fields saw it. This article detailed why it is wrong to simply use only omega 3 or only omega 6 in experiments, and why experimental results are often misinterpreted. As mentioned in the first paragraph above, most nutritionists and even physicians wrongly state that any extra omega 6 is "bad." This is because **they are NOT using organic unadulterated oils** in most of their experiments. Researchers use ruined omega-6-containing oils, like those found at your local commercial supermarket. These are loaded with cancer-causing transfats, preservatives and other additives, so you'd expect a problem.

But the basic reason for researchers' distorted results are that, under real-life conditions (which *Life-Systems Engineering* ALWAYS utilizes), the two healthy essential oils are consumed **together** most of time and only rarely apart. Researchers weren't adhering to *real-life* conditions, so the test results were wrong. It's that simple.

The following is the pertinent phrase from the medical journal article, "**Who's afraid of n-6 polyunsaturated fatty acids?**" Berry, E.M. *Nutr Metab Cardiovasc Dis* 2001 Jun;11(3):181-188:

**"N-6 Fatty Acids [omega 6] are Essential for Normal Growth.... and it is therefore wrong to condemn only n-6 fatty acids in their etiology."**

*Life-Systems* Engineering translation: We **require plenty of unadulterated, unprocessed omega 6**, regardless of what you may be told.

Moreover, the argument that omega 6 and omega 3 EFAs must be taken together and in the correct balance with each other is documented in the following quote from a medical textbook article. This article makes it clear that omega 6 and omega 3 fatty acids in combination, even at what are considered “low doses,” are more effective than omega 3 alone at higher doses. The following is the pertinent phrase:

“...[There is a] synergistic effect of n-6 [omega 6] and n-3 [omega 3] fatty acids at low doses **which is greater than the effect of high doses of n-3 fatty acids alone.**” (*Prostaglandins in the Cardiovascular System*, 1992.)

Perhaps this information won't stop most people from following the popular health press and medical authorities and incorrectly thinking that any extra omega 6 is “bad,” and all omega 3, at almost any dosage, is “good.” But you will soon see **how easy it is to overdose on omega 3 by following these bad recommendations.**

### **What Percentage of EFAs In Your Food Have Been Ruined?**

As mentioned above, most of the omega 6 EFAs in today's foods are ruined—either hydrogenated into transfats or adulterated with chemicals and preservatives so the foods that contain them don't go bad at the supermarket or on your shelf at home. Everything from peanut butter and frozen foods to salad dressings and cooking oils is loaded with ruined omega 6 EFAs.

We can safely hypothesize that, at the *very minimum*, the majority (51%) of the oxygen transfer capability in commercial omega 6 oils and oil-containing foods has been ruined from transfats, preservatives, and chemicals. The proof of this is that any of these oils can stay open and exposed to air for weeks before going bad, instead of just days, as unprocessed oils do! (It is obvious when oil has gone bad because it smells and tastes bad and gives off gases that release when the container is opened.) Most commercially available oils have been ruined through such processing or they would not be so “spoil-proof.”

Now, with western diets containing an estimated twelve times the amount of omega 6 as omega 3, and the fact that at the very minimum, at least 51% of omega 6 EFAs are ruined as to their oxygen transfer ability, we obtain at most a 49% effectiveness of the omega 6 EFAs eaten in the normal diet. If we round these figures to 50% ruined versus 50% effective, it equates to an estimated **6 to 1 ratio of effective omega 6 EFAs to omega 3 EFAs obtained in the diet**. This is actually the greatest amount of effective EFAs in the diet we could reasonably expect to find. We will see below that this ratio falls slightly under our calculation of the average human requirement for EFAs.

But there are further factors to consider that will affect what our ratio of omega 6 to 3 EFA supplementation should be. Even if you consumed the above ratio so you were getting a 6 to 1 ratio of effective omega 6 EFAs to omega 3 EFAs in your foods, given that at least half of it is adulterated, you would need even more “good,” organic, unadulterated, parent omega 6 than that **to compensate for the bad**. Importantly, **the amount of omega 3 required stays the same because** there are few foods containing omega 3 that are “ruined” in the way that omega 6 EFAs are. Let’s continue.

### **Are There Other Things We Need to Know?**

Yes, and the first one is a whopper! Virtually everyone is missing a key point concerning “competition” in the body between ruined and good omega 6: **your body still uses the defective EFAs, even though they don’t work! That is correct**—your body will use the “next best thing” in the cells if it can’t get the parent omega 6 EFA it needs. It will use adulterated or *transfat* parent omega 6, it will use an EFA derivative, or it will be forced to even use the non-essential oleic acid (omega 9) that your body can either manufacture on its own or can come from foods like olive oil. But these substitutes do not provide the highest level of oxygenation for the cells. They are thus nearly worthless in improving cell respiration and health. You must therefore “overpower” the defective EFAs you are taking in through the diet with adequate pure, unprocessed and unadulterated omega 6 EFAs to take their place.

As mentioned above, the omega 3 that you get from foods is usually *not* adulterated. **This is a further reason that more omega 6 supplementation in relation to omega 3 is needed**. There is no “competition” between good omega 3 EFAs from supplements and bad omega 3s from food, and therefore no need to overwhelm any bad omega 3 EFAs.

The last factor, described in the next section, is the simple fact that the body needs and uses much less omega 3 than omega 6 overall.

All these facts show why, for maximum protection, you should take much smaller quantities of omega 3 EFAs in relation to your omega 6 supplementation than is recommended by most nutritionists, health writers and supplement manufacturers. Few, if any, in this field have worked through this analysis in a comprehensive manner, considering all important factors.

Let's continue with an examination of body tissue composition to discover what EFA ratio we require.

### Important Organ and Tissue EFA Ratios

It is necessary for us to study the EFA composition of various tissues and organs like your brain, skin, heart and muscle to discover the overall EFA requirement of the body. It is known from pathology studies that the brain and nervous system have a ratio of one part omega 6 to one part omega 3 (1 to 1).

Here's another shocker that appeared in the medical journal article: "Fatty acid profile of skeletal muscle phospholipids in trained and untrained young men," Agneta Anderson (et. al), *American Journal of Endocrinological Metabolism*, 279: E744-E751, 2000.

A little-known but very key fact about muscle structure that many nutrition writers overlook is that **muscle contains from 5.5 to 7.5 times more omega 6 than omega 3**, depending on the degree of physical condition! (Extremely fit individuals require less omega 6 because their oxygen-transferring efficiency, including an increased number of cell mitochondria, is greater than in nonexercising individuals. But because most of us are not elite athletes, we require an even greater amount of omega 6.)

So, on average, a muscle contains 6.5 times more omega 6 than omega 3 (a ratio of 6.5 to 1). And last, most other tissues in the body contain a 4 to 1 ratio of omega 6 to omega 3. These relationships are shown in the table below.

Ratio of Tissue Composition		
Tissue	Omega 6	Omega 3
Brain/Nervous System	1	1
Organs and Other Tissues	4	1
Muscles	6.5	1

The next thing to consider is what percentage of your body weight do the various organs constitute? We find that brain and nerve-related organs make up only about 3% of body weight, a very small quantity. The remaining organs, such as your heart, liver, skin and pancreas, make up approximately 9% of body weight. And the last—a very important figure—is the percentage of body weight your muscles comprise. Muscle accounts for close to half of human body weight (50%).

Tissue	Ratio of Tissue Composition		Percentage of Total Body Weight
	Omega 6	Omega 3	
Brain/Nervous System	1	1	3
Organs and Other Tissues	4	1	9
Muscles	6.5	1	50

Now, many nutritional writers state that simply because the brain has a 1 to 1 omega 6 to 3 ratio, a 1 to 1 omega 6 to 3 ratio makes the ideal supplement. But this analysis is wrong. It should be obvious from the second table above that the majority of our EFA-containing tissues and organs (per the above chart, 59% of body weight) require much more unadulterated omega 6 than omega 3 to function properly. If we use the EFA ratio of the brain and nervous system tissue (1 to 1), more than half the remaining tissues in the body will be shorted on omega 6 EFAs. On the other hand, keeping these tissues happy with enough unprocessed omega 6 is the key issue that most nutrition writers overlook. Letting *any* tissues run short on these omega-6 EFAs, as will occur if you follow the most prevalent nutritional recommendations, leaves your body significantly more susceptible.

### One Last Important Question About Supplementation

You may be wondering why the animal protein that we consume from beef, other red meats, poultry, eggs, pork and fish doesn't give us enough of the required parent omega 6. Why should we need to acquire so much through supplementation? Don't these protein sources contain comparable parent omega 6 to what is shown in the EFA tissue composition tables above?

To answer this, you need to understand several things. First, heat destroys both omega 3 (which is highly heat-sensitive) and omega 6 EFAs to a significant extent.

The less cooked the proteins are, the better sources they are of parent omega 6 and 3. However, few people enjoy or can stomach meat, fish or eggs that are raw or only lightly cooked (and there *are* health safety concerns that may arise with undercooked meats, fish and eggs, such as parasitic and bacterial infection of the foods). So large quantities of EFAs are lost through cooking.

Additionally, most meat, fish and eggs today have significant residues from the pesticides, hormones, preservatives and other chemicals added to the foods that are fed to animals and farm-raised fish. Chemicals are often even injected. Thorough cooking inactivates *some* of these additives' harmful effects but *significantly lessens* the EFA content in the process.

On top of this, the parent omega 6 content of the tissues and organs of animals can vary greatly, depending on what the animals are fed. While cattle and other grazing animals' original natural foods—live grass and other plants growing in pastures—have a more balanced EFA content, the grains that much of the cattle being raised today are fed have a highly unbalanced EFA content in favor of omega 6 by as high as 10 to 1. This sounds wonderful—just what we need—until you factor in that cooking renders a significant portion of those omega 6s inactive. Also, EFA damage occurs as a result of the chemically assisted farming methods begun in the 1900s to treat both soils and crops.

In light of all these factors, the best answer is to cook protein foods thoroughly and supplement your EFAs based on the calculation below.

## **Eicosanoids**

There is widespread misunderstanding concerning these interesting substances—another misunderstanding that is responsible for widespread, yet incorrect, nutritional recommendations telling us to “take lots of omega 3” (usually in the derivative form from fish oil supplements).

Eicosanoids are your body's cellular analogy to hormones. But unlike hormones, they work in your body with lightning speed and don't last long. Furthermore, they act locally in the cells and don't actually enter the bloodstream, because their function is so rapid.

While the *parent* omega 3 and 6s are used throughout your body predominantly “as is,” **just a small amount** of omega 3 and omega 6 *derivatives* are made into these eicosanoids after many biochemical modifications, “as needed.” For example, the

eicosanoids made from omega 3 EFAs come from the EFA derivatives DHA and EPA (which your body makes from parent omega 3 EFAs “as needed”). Another example is the eicosanoids made from omega 6 EFAs—your body manufactures them by modifying arachadonic acid (which your body makes from parent omega 6 or takes from proteins ready-made—if they aren’t adulterated).

**PGE<sub>1</sub> eicosanoids are formed from parent omega 6 and are known from the medical textbooks to be fast-acting, anti-inflammatory and have significant immune-enhancing properties.** We need to ensure that plenty of them can be made. (Ref: *Smart Fats*, Michael A. Schmidt, Ph.D, pgs. 27-30.)

It is also vital to note that the omega 3 and omega 6 eicosanoids work together in a complementary manner. Neither is ever found alone in your body. For example, one increases blood pressure while the other decreases blood pressure. This required natural balance is another reason that the current nutritional recommendations to highly favor omega 3 derivative EFAs over omega 6 EFAs are harmful. Doing so will unbalance your system. In fact, we must warn you that **overdosing on omega 3 can lead to profuse internal bleeding from eicosanoid overproduction!**

The bottom line is that Mother Nature makes both omega 3 and 6 eicosanoids AS NEEDED from parent omega 6 and 3 EFAs and doesn’t require our direct intervention. So supply unadulterated parent omegas and let Mother Nature do her job.

### **The Correct Supplement Calculation**

What are safe and effective quantities of omega 3 and omega 6 EFAs for supplementation? As explained above, the western diet is estimated to contain an effective (still capable of oxygen-transference) ratio of 6 to 1 omega 6 to omega 3. Additionally, we have seen that **the majority of cells in the body require a ratio of at least 6.5 to 1 omega 6 to 3.**

The difference between the estimated good EFAs obtained in the diet and the cells’ requirement is 0.5 parts of omega 6 that need to be supplemented. To this we will add a small amount of extra omega 6 to allow the “good” omega 6 to effectively combat and overpower the “bad” omega 6 in the diet: for this purpose we will add from 1 to 2 parts “good” omega 6. Therefore, we conclude that we need to supplement an additional 1.5 to 2.5 parts of good omega 6 for every 1 part of omega 3 to meet the body’s needs. For greater ease in formulating supplements, and to remain conservative in our

recommendation, we will round these figures and deduce that an EFA supplement should contain a ratio of from **1:1 parent omega 6 to omega 3, at the lowest end, up to 2:1 parent omega 6 to 3, at the high end.**

If more omega 6-containing foods are consumed then this ratio can be safely increased even more in favor of parent omega 6!

**Note 1:** Many nutrition writers quote various “experts” who claim that the general U.S. population is consuming 15, 20, or even 30 times more omega 6 than omega 3 in its diet. Do not accept these numbers—they are way off the mark, not being based on a complete analysis. All these writers and experts are completely ignoring the fact that meats like steak and chicken contain lots of omega 3. This unaccounted-for omega 3 in foods decreases their supposedly overbalanced omega 6 to 3 ratio dramatically. For example, depending on the specific diet of the animal, steak and hamburger will contain a ratio typically between 2:1 to a high of 10:1 in favor of omega 6. A grain-fed chicken produces eggs that contain a ratio of from 1:1 to as much as 10:1 in favor of omega 6. But you should also know that fish, shrimp and shellfish—a primary protein in many people’s diets, contains *more omega 3* than omega 6—usually from 2:1 to a high of 20:1 in favor of omega 3. Therefore, unless you are consuming lots of straight omega 6 containing oils “directly from the bottle,” the average American omega 6 to 3 ratio consumption *can’t be above 12:1*. That is why our estimate of 12:1 omega 6 to 3 in the diet is scientifically correct to base supplementation on.

**Note 2:** The final thing to watch out for in your oil capsule supplements is to make sure that “high oleic” safflower or “high oleic” sunflower oil is *not* used. Although those oils are stable and acceptable for commercial frying, they contain a mere one-sixth the “high linoleic” amount of parent omega 6 in them! Non-essential omega 9 takes their place. Even though one of these supplement’s EFA ratio may be close to 1 to 1, the amount of omega 6 in the oil won’t be sufficient per capsule. You will do much better to find either “high linoleic” oil (parent omega 6), or a formula containing evening primrose oil (which contains 70 or more percent parent omega 6). Evening primrose oil has not been modified to be high oleic.