BODYBIO Bulletin

The Inside Story of Omega 3 Fatty Acids

By Ed Kane and Patricia Kane, PhD

Omega-3 fatty acids —EPA and DHA— are the BIG news in nutritional medicine today — and for some very good reasons. The scientific evidence is now irrefutable that DHA and EPA are essential for good health and long life. They are such important nutrients that agencies and institutions historically hostile to nutrition have gone on record to support their use. The American Medical Association, the American Heart Association, the United States Department of Agriculture (USDA), even the good ol' "Food and Drug Administration (FDA)," are all praising DHA and EPA.

While all of this is certainly a positive development, the rise in sales of omega 3 (n-3) fatty acid is in direct response to the high press coverage. It's like everybody on the globe is jumping on the omega 3 fish oil bandwagon. The result of this excessive reporting in the media with relatively little knowledge of fatty acid chemistry has lead to overindulgence (prescribing and taking too much). This excess has occurred worldwide with omega 3 fish oils — at a disturbing rate.

At BodyBio we have been observing these results through the in-depth examination of thousands of individual fatty acid tests, year after year. Analyzing our red blood cell fatty acids (RBCFAs) is a principal part of what we do at BodyBio. The active ingredients of fish oil, EPA and DHA, are generally in a ratio of 3 to 2 (180 mg of EPA and 120 of DHA). They are both highly active and powerful nutrients with a wide range of functions including the brain, sensory organs such as sight and hearing, synaptic function, heart modulation, control of Arachidonic Acid (inflammation), etc. All membrane fatty acids are intimately involved in regulating all aspects of the body's chemistry including control of each others' families, the 6s and the 3s. However, excess omega 3s will easily suppress the omega 6s, whereas the reverse does not seem to occur, 6s do not suppress the 3s.

If we follow the popular media mantra, we are led to believe that adding fish oil to our diet will improve our wellbeing by raising the omega 3s and avoiding / lowering the omega 6s. This should be a good thing, since any suppression of omega 6 would tend to lessen inflammation and lead to a healthier state. However, based on our research, the testing of red cell lipids with thousands of doctors, over the past 10 years and the experience of Dr. Patricia Kane's research has shown the reverse to be true.

To understand the fatty acid disturbance we see requires a shift in thinking about omega 6 and inflammation. While inflammation can be very disturbing, in itself, it should not be regarded as bad. Aside from the correction that the body undertakes to alleviate the stress which can result in inflamed tissues; it is predominantly sending a signal, a message that something is wrong. We certainly want to lower the disturbance but the last thing we should be doing is killing the messenger, which is exactly what is occurring with the unusual power of fish oil.

Over 80% of the Johns Hopkins' / BodyBio red cell fatty acid tests performed yearly*, register with high omega 3s and low omega 6s. There is a direct correlation with the amount of fish oil consumed and the elevation of EPA and DHA. Associated with the distorted fatty acid analysis is a wide array of disorders such as fatigue, irritable bowel, nausea, eczema, headaches, visual disturbance, memory loss, etc.

* The vast majority of BodyBio Red Cell tests were performed on individuals that had been seeking medical help for a period of time before consenting to do an Fatty Acid Analysis. Fish oils were commonly employed in their effort to find relief. The 80% referred to above is unusually high but is the result of 1) that narrow select group and 2) the individuals personal reporting of the use of fish oils often over several years. Would this have been the case 10 years ago – probably not.

While we are told that omega 6s are "bad guys," there is really no such thing. If it is essential, as omega 6s are, and the body spends precious energy to create and maintain it, it is wrong to assume that the metabolic effort is misplaced. Maybe too little or too much — but certainly not bad. Currently, there is no way for humans to survive without omega 6 fatty acids. This includes Arachidonic acid (AA), which contains 4 double bonds in its lipid chain and is one of the highest concentration at ~14 % of the red cell membrane. Arachidonic also contains the highest concentration of energy in the membrane and the lead controller of all cellular signaling, and quite possibly of all control in the body. As we have recently been seeing and hereby report — the suppression of AA on a large number of individuals by the over-consumption of fish oil has been directly responsible for an unusual increase in physical and mental distress.

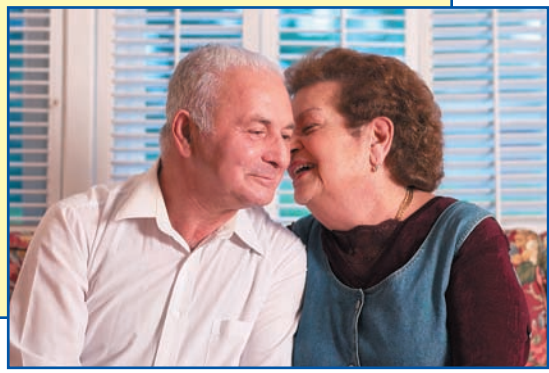
Our targeted approach is to momentarily take patients off of fish oil, encourage the consumption of a high nutrient dense diet (low carbohydrates) rich in omega 6 EFAs such as egg yolk, evening primrose oil, and a combination of cold pressed sunflower and flax oil (4:1 oil, 80% linoleic, 20% alpha linolenic), plus essential vitamins / minerals, all of which effectively raise omega 6 saturation levels. The patients', after shifting their diet and supplementation, consistently report that they all begin to improve. In the world of medicine one should never say all, however, we repeat, all patients tend to reverse their negative symptoms by bringing their omega 6s and their omega 3s back in balance.

It is ***after all*** about ***balance***. Is fish oil bad for you?? Of course not! What is misdirected, either by self-medication or by being over prescribed, is an over-expression of omega 3s which can occur with any drug or nutrient. Also required, and in part because the medical reliance on fatty acid nutrition is quite new, is a new-found respect for the metabolic power of the omega 3s, especially EPA. Without the valuable analysis from the world's premier fatty acid laboratory at Johns Hopkins, we would have never been able to make this analysis and relay to you how to readjust your patient's essential fatty acid balance. We would have no reference to do so.

CASE HISTORY #1

Annette was determined that she would not follow in her family's footsteps in regard to her health. To hold off aging and ill health she used 10 capsules daily of fish oil, restricted all meat, eggs and dairy in her diet and limited her intake of all oil except olive oil that she used in her salad and to cook with.

After two years of high fish oil intake, Annette noticed that she was developing eczema. Her allergies got much worse and she felt tired all the time. Her moodiness was irritating to others but worst of all she had developed severe difficulties with her ability to think and perform at work. Annette visited a physician specializing in fatty acid therapy and longevity who tested her red cell lipids and found them to be alarmingly unbalanced. Her omega 3 EPA was 1500% high while her omega 6 Arachidonic Acid was 156 % low and her omega 6 Gamma Linolenic Acid was 94% low. Her doctor explained the importance of balance of her fatty acids and set up a targeted nutritional protocol for her. After two weeks of getting on the correct balance of fatty acids Annette felt much better. Her eczema started to clear, her mood stabilized, her energy and alertness returned and she found her work performance normalized. After 6 months of re-balancing Annette's physician allowed her to begin fish oil with one capsule of Kirunal daily along with wild salmon and sardines, evening primrose, 4:1 omega 6 to omega 3 balanced oil, and eggs / butter in her diet.



CASE HISTORY # 2

Jordan is a 3 year old boy with autism. His mother was told by his natural practitioner to give him 4 capsules of fish oil daily. After 4 months on fish oil Jordan's behavior and attention had deteriorated. Testing Jordan's red cell lipids revealed that he had a gross overdose of omega 3 as EPA and DHA with a deep suppression of the omega 6s. Jordan was then given primrose oil, eggs, butter and sunflower oil for a few months and his behavior and attention improved dramatically. In keeping with balance, Jordan was then given 4:1 omega 6 to omega 3 balanced oil, primrose, eggs / butter and *one capsule of Kirunal three times weekly* to maintain a balance of his essential fatty acids.

CASE HISTORY #3

Adam is an 8 year old boy with Muscular Dystrophy. A health care practitioner prescribed 6 tablespoons of fish oil which he took over an 18 month period. Adam's parents were deeply concerned with his deteriorating condition and a red cell lipid test was drawn June 2005. Adam's EPA was grossly elevated (H) at 3888 %, his DHA was also (H) at 312 % and his Arachidonic was deeply suppressed (L) at 356 %. Adam's EPA was the highest on record with Arachidonic Acid the lowest ever recorded at the Peroxisomal Diseases Lab at Johns Hopkins. Adam presented with symptoms of nausea, poor appetite, hypotonia (low muscle tone), poor coordination, severely abnormal gait (walking), with stiff and very slow movement. Interesting to note that Adam's brain function was good, even elevated, however he could not perform physically. As soon as the fish oil was stopped Adam's appetite increased and his nausea disappeared. He was started on 10 capsules of high potency evening primrose oil daily along with 4 tablespoons of 4 to 1 omega 6 to omega 3 oil. Because of the severe distortion of Adam's essential fatty acids it will be necessary to retest in 3 months to track the changes. Fatty Acids are normally tested yearly.

Adam's hypotonia provides a clearer picture of the modulating effect of EPA on Arachidonic. The term *modulate* is insufficient to describe the power of EPA considering excess intake. It takes an exaggerated overdose such as Adam's to paint a vivid picture of the power of fatty acid function. Elevation of EPA can literally block function, not just modulate, thereby impacting all thought and motion. EPA's effect is similar to the action of NSAIDS blocking Cox I and II, and could be an alternative therapy to those common drugs. A concept anathema to the drug world since the occasional use of EPA would have few negative concerns, however, deep over-expression could be — as with the above case histories. The mode of action of NSAIDS is to specifically block Arachidonic, which it effectively does. EPA accomplishes the same effect, which opens a new focus on EFA metabolism. It also brings the omega 3 fatty acids into sharper focus in relation to drugs and homeostasis, all of which is little understood or appreciated in today's rush to endorse too much fish oil. A smaller fish oil capsule with a higher EPA content such as Kirunal could be a much better choice to fight inflammation. It's natural (NSAIDs are drugs) and we all need fish oil, they're essential – however, as stated above, use carefully.

Note:There is an innate ability to re-acquire a balanced state given a change in lifestyle. The variation in age, gender, and general health are so varied that to make an estimate as to time difficult. It is strongly suggested to secure a BodyBio Fatty Acid Profile from your Health Care Provider. (Information on the BodyBio Red Blood Cell FA test for Health Care Providers – please call BodyBio at 888 320 8338 or go to our website at bodybio.com).

Consumption of omega-3 fatty acids may reduce the risk of coronary disease. FDA evaluated the data and determined that, although there is scientific evidence supporting the claim, the evidence is not conclusive.

The literature is replete with information on the value of omega 3, little on the value of omega 6. It is much too deep and complicated a subject to address in brief; however, the omega 6 family is by far the predominant fatty acid family with an infinite number of management functions throughout the body. The power of EPA at ~ 0.46% of the red cell compared to ~14% of Arachidonic (30 times smaller than AA), is relegated to modulate and down-regulate Arachidonate, thereby refining function and raising performance to a higher level, which it effectively does. A look inside the retina provides an excellent example of the specialization of the two fatty acid families.

There are 100 million photoreceptor cells responsible for sight in each retina. To perform at a high level they require the highest lipid energy available in the membranes of the outer segment of the cell. Predators such as cats, bears, birds of prey, all carnivorous life in the oceans and especially primates have a high concentration of DHA, a 22 lipid carbon chain. DHA has the highest number of double bonds [6] within that chain. The more double bonds the higher the energy value.

In primates, particularly us, the membrane of the eye contains ~50-55% DHA (the highest in the body, the brain has ~17-22%). Grazing animals have ample access to the lowest order of omega 3, alpha linolenic (ALA), which begins the n-3 family with 3 double bonds. ALA is very high in green leafy vegetation, although the fatty acid content is low. However, grazing animals can not efficiently metabolize ALA up to DHA. We are also inefficient in this process, however, we are a predator, we can eat fish and get all the DHA we need. Small mammals such as the rat are 100% efficient in fatty acid metabolism. The big grass eaters use instead a 22 carbon omega 6 which they metabolize up to 5 double bonds, the maximum number for the n-6s.

There is a dramatic difference in the energy value of a 22 carbon n-6 with 5 double bonds compared to a 22 carbon n-3 DHA with 6 double bonds. That difference registers with a significant improvement in eyesight which gives all predators a leg up in survival. The big cats can watch the herd close up whereas the antelopes have to raise their noses high in the air and sniff, hoping to get a sense of what's out there. That's a huge advantage. In addition, the higher concentration of DHA in our predator brains translates to higher intelligence since DHA is directly involved with synaptic activity and brain function.

However, it does not correlate that an over-expression of DHA will increase brain power in adults, but if the mother does not take in sufficient omega 3 HUFAs (highly unsaturated fatty acids with DHA) during pregnancy or when nursing, the baby's intellect may not fully develop. The pregnant mother needs generous intakes to nurture her fetus, throughout pregnancy. Postpartum depression has in fact, been linked to omega-3 deficiency. The newborn needs it to build and mature all the organs. Older children need the omega-3s to help them function in school and avoid behavioral problems. Parents need them also, perhaps even more so.

For references to this article, go to www.bodybio.com.

David Horrobin's Scientific Legacy

Kirunal was formulated by Dr. David Horrobin, a pioneer in lipid chemistry. He passed away in April 2003. The following obituary written by Dr. Patricia Kane appeared in the British Medical Journal 23 May 2003.

David Horrobin was one of the most productive clinical scientists of his generation, a highly successful businessman, and an inspirational figure in the world of medicine. As a brilliant Oxford student, David achieved a scholarship to Balliol, a prize fellowship and top physiology degree where he read medicine. He did his clinical studies at St. Mary's Hospital in London. An unconventional career move followed an offer to a chair in physiology at Nairobi Medical School, Kenya. He later became professor of medicine at the University of Montreal. While at Oxford he became close to the nutritionist Hugh Sinclair, who felt that dietary essential fatty acids had a major role to play in health and disease. When prostaglandins became the focus of widespread research interest, Horrobin realized that they were synthesized from an essential fatty acid, gamma linolenic acid (GLA). His work in omega 6 fatty acids followed and is widely recognized.

David was the founder and editor of the journals *Medical Hypotheses* and *Prostaglandins, Leukotrienes, and Essential Fatty Acids*. He was a prolific writer himself and wrote and edited numerous books on a wide range of subjects, although his main interest was schizophrenia. He inspired people with his unique combination of enthusiasm and tenacity, humility and friendliness, open-minded creativity, huge breadth, and depth of knowledge and outstanding analytical power.

The number of his publications is impressive. There are 939 publications, with a further 114 patents in which he is a named inventor, bringing the grand total to 1053. From his first publication in 1964 through to his death, this is equivalent of one publication every two weeks for 39 years — a prodigious achievement.

Dr. Horrobin personally supervised the formulation of Kirunal. His life long interest in brain disorders led him to the application of EPA at a higher dose for those disorders. One of the most interesting showed an improvement of schizophrenia at 2 grams per day and a reverse of benefits at 4 grams. The size of the capsule and the 3:1 ratio were significant in his studies. Supplementing with Fish oil can be a remarkable nutritional asset. Kirunal is a more intelligent approach to achieve the control you desire.

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Kirunal –
A better formulated omega 3

Kirunal is molecular distilled to reduce the levels of Lead, Mercury, Arsenic, Cadmium, PCB, Dioxins and Furans. The premium oil is protected with Nitrogen and fortified with 1000 ppm of natural vitamin E.

Kirunal is a 500 mg capsule with 105 mg of EPA and 35 mg of DHA (3:1). The smaller size is more convenient in titrating, especially for children. However, the ratio of 3:1 provides for a higher therapeutic dose according to the studies of David Horrobin. Recent studies published in peer reviewed journals and presented at international conferences have shown that the most effective supplements contain higher amounts of EPA relative to other essential fatty acids. Some of these studies have shown that EPA at the higher ratio to DHA was more effective in modulating Arachidonic. Most fish oils are only 50% higher in EPA and are produced in larger capsules. Kirunal was, in fact, the oil used in several of these studies. Most other fish oils on the market today do not have the optimal ratio of EPA to other fatty acids.