



Supplement to
The Art of Getting Well
**Essential Fatty Acids Are
Essential!**

Sources are given in references.

Authors of contributions/quotations are alphabetically arranged;
major author, if any, is underlined.

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For years establishment medical practitioners have told folks that supplemental vitamins and minerals were unnecessary, that what we eat is sufficient provided we eat plenty of carbohydrates, fats and proteins.

It's a real wonder that some farmer didn't explain that hogs, horses, chickens and cows had to have the very best, including a wide variety of vitamins and minerals, or they didn't fatten, have energy, grow and give quality eggs or produce milk, respectively.

And certainly at the same time some minister, rabbi or priest could have explained that humans were both animal and spirit, and that if the spirit wanted to stay in the animal carcass it had better see to it that the carcass was provided with at least the same good vittles provided to the farm animals.

We have indeed come a long way since those days when everything related to good nutrition and its importance was pooh-pooed.

Some physicians still pooh-poo good nutrition. They are slowly disappearing, and if one wants to, one can find a doctor somewhere nearby who has studied beyond his medical school training.

When my eldest son completed his M.D. degree, he went into the school knowing more about nutrition than the majority of his teachers. He said, "You know dad, they still haven't taught us about nutrition."

If they had done so, they would have sung the same theme still played by "trained" dietitians: "Just eat a balance of carbohydrates, fats and protein!" -- no regard for quality or content!

For the most part, knowledgeable physicians are self-trained regarding nutrition. Being interested in wellness, rather than sickness, such physicians know at least as much as a successful hog farmer, and they also realize that no one can stay well in the absence of the dozens of trace elements and thousands of complex compounds that were built

into us during the evolutionary millennia of our bodies.

One of the most overlooked foods when producing wellness is utilization of the proper oils and fats. When the "trained" dietitian says to use "fats", s/he usually means to stay away from certain natural fats that our bodies evolved with. S/he usually means to stay away from butters, animal fats, and other saturated oils and fats, -- to go along with the Madison Avenue hype paid for by those who have chemically changed these fats into a variety that has long shelf life, so-called "polyunsaturated" oils and hydrogenated fats (i.e. margarine, various touted cooking oils, et. al.)

Aside from sugar, I suspect that this one factor in life -- propagandizing about hydrogenated oils to an unsuspecting public -- has contributed more toward debilitating diseases than any other single factor!

I was pleased when my son brought to me a copy of an article titled "The Effect of Dietary Supplementation with n-3 [Omega 3] Polyunsaturated Fatty Acids on the Synthesis of Interleukin-1 and Tumor Necrosis Factor by Mononuclear Cells" by Endres, et al., "Fish-oil Fatty Acid Supplementation in Active Rheumatoid Arthritis: A Double-blind, Controlled, Crossover Study," by Kremer JM, Jubiz W, Michalek A., et al, and by Bittiner SB, Tucker WF, Cartwright I, Bleehen SS, "A Double Blind Randomized, Placebo-controlled Trial of Fish Oil in Psoriasis!"

In the Endres, et al. abstract is the following: "We conclude that the synthesis of IL-1Beta, IL-1Alpha, and tumor necrosis factor can be suppressed by dietary supplementation with long-chain n-3 [Omega 3] fatty acids. The reported anti-inflammatory effect of these n-3 fatty acids may be mediated in part by their inhibitory effect on the production of interleukin-1 and tumor necrosis factor."

What does this mean?

It means that someone in establishment town is paying attention to doctors that know something about nutrition.

It also means that if you will take the right kind of fatty acids (oils and fats) you will have less inflammation and generally have better health!

In the *Science News*, which abstracts complex studies for easy reading, is the article "Fish Oil: New Hope in Fighting Malaria," by Orville A. Levander and Arba L. Agar, Jr², they say, "fed mice a diet high in fish oils but containing no vitamin E." The malarial parasite (*Plasmodium yoelii* or *P. berghei*) were devastated. This was particularly interesting because by diet alone, strains of the parasites found in mosquitoes that have developed a resistance to Chloroquine -- an antimalarial drug -- were affected.

On the same page was another interesting report, titled "It's Not Fish Oil, But . . ." reporting what many physicians oriented toward nutrition already knew: that oils from certain plants, like soybean, can be converted to Omega 3 fatty acids (one of the essentials) by humans.

In *Archives of Virology*³ is "Unsaturated Free Fatty Acids Inactivate Animal Enveloped Viruses," such as herpes, influenza, Sendai, Sindbis within minutes of contact! From 1994 forward, professional articles are rapidly appearing, explaining that trans fatty acids are indeed the "bad" fats!

What are the right kind of oils?

Those born since World War II may be totally surprised to find that virtually every kind of oil that we've been told is good, is bad, and almost every kind of oil that we've been told is bad is really good.

I remember when the cost of butter rose so high during World War II, that we were more than pleased to get "a satisfactory substitute" called "margarine" for very low cost. In Iowa, a dairy state, where the laws prohibited selling margarine of the color of butter, my mother purchased the margarine in a plastic sack. The plastic sack also held another breakable plastic package that contained butter

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coloring and added vitamins. Mother broke the smaller package inside the larger by squeezing and then kneaded the larger one before opening it. When the larger was opened the mixture apparently looked and spread just like butter, but obviously had a higher melting point.

For years I and my kids have unwittingly used this dangerous product, along with many new kinds of equally damaging cooking oils and fats.

Margarine is not good for you, but butter is. Saturated animal fat is better for you than hydrogenated vegetable fats. Most peanut butters contain bad oils. French fries and potato and corn chips are prepared with hydrogenated (and often stale, broken-down) oils.

Cold pressed oils are best, or something like "Pam" (Olive Oil) for cooking — but remember — oils heated over 350° become changed to an undesirable form — all according to referral physician Gus J. Prosch, M.D. in Chapter IX "Nutritional Aspects of Rheumatoid Arthritis" in *The Art of Getting Well*. (See <http://www.arthritis-trust.org>.)

Gus Prosch, Jr., M.D. recommends cooking only in virgin Olive Oil. Olive Oil does not break down until 400° is reached. He says: "Turn down the stove temperature and cook slowly. That way you'll get some of the necessary fatty acids along with your healthier food. Olive Oil (Virgin) is not linolenic acid, but rather oleic, which is a good fatty acid that helps to normalize cholesterol levels in the blood, as seen in people on the Mediterranean diet. Such a diet lowers cholesterol as compared to the American diet." Others recommend cooking in either virgin olive oil or coconut oil.

But won't these animal fats and oils make us fat or provide us with too much cholesterol?

The index measure for "too much cholesterol" is a very poor measure for heart risk. The Madison Avenue folks do us a disservice in selling us on the idea that we must be careful of too much cholesterol. News media assist this disservice, probably through shallowness and ignorance or because their major advertisers advocate hydrogenated oils and tout the supposed dangers of too much cholesterol.

According to Gus Prosch, Jr., M.D., our bodies normally manufacture cholesterol, and this substance is nearly as important as oxygen. It helps produce hormones and is found in all of our cells. Fifteen to 20% of our cholesterol comes from our diet, whereas the body manufacturers 80-85% of it.

The body requires cholesterol, and if we do not provide the body with substances to create cholesterol, our bodies will automatically manufacture it. If we provide the substance through ingestion of foods, our bodies do not manufacture very much. There is a homeostatic mechanism operating — a tendency to restore cholesterol to a pre-determined level once the "mechanism" has been disturbed or changed — meaning that the amount of cholesterol we have at any one time is a function of our genetics and our needs more than it is a function of eating the wrong kinds of fats.

I think there is more evidence to show that a better index of risk to the heart and circulatory system is the ratio of High Density Lipids to Low Density Lipids, and this ratio may have very little to do with the amount of fats or oils eaten -- and probably more to do with the kinds of oils eaten, our lifestyle (including diet and stress) and genetics.

In *An Update on Treatments for Hyperlipidemia*, Cardiovascular Research Ltd⁵, the author says that "The Cholesterol Controversy Requires Clarification: While cholesterol has been magnified as the primary cause of coronary artery disease, the discriminating physician knows that this essential lipid is a critical component of nervous tissue and other vital organs. Cholesterol in its pure state is also a potent anti-oxidant. Any attempt to block the liver's ability to manufacture cholesterol may be injurious to the patient over the long term. . . one should also consider the increased cancer risk from substitution of polyunsaturated fatty acids in

vegetable oils. Heated vegetable oils are high in lipid peroxides, a known contributing factor to the formation of atheromatous plaque along the arterial intima." Oxidized cholesterol may be most damaging to health, but an appropriate diet in other respects may limit this danger.

In "Mechanisms of Disease," (Franklin H. Epstein, M.D., Editor)⁶, a most interesting mechanism for Atherogenesis (the start of atherosclerosis) is given, with a large bibliography. The article is too technical for us, but of interest to physicians. It is obvious from this paper that the measurement of cholesterol per se is not very critical for making the proper health determinations.

In a paper titled "Fish Oil, Fatty Acids and Human Health" *Capsulations*TM, Harvey F. Carroll, Ph.D.⁷ lists Alpha-Linolenic Acid (ALA), Eicosapentaenoic Acid (EPA), Docosahexaenoic Acid (DHA) as the n-3 fatty acids, often referred to as "Omega-3".

This paper is also too technical to reproduce here, and so I merely quote Carroll's conclusion. He has an extensive bibliography which can be obtained through the above address.

Carroll says: "The n-3 [Omega-3] fatty acids have useful metabolic effects with little or no side effects. But note that species differences in eicosanoid metabolism indicate that animal results may not always be applicable to humans. All in all, it would seem that increasing the consumption of fish and/or supplementing with EPA (Eicosapentaenoic Acid) and DHA (Docosahexaenoic Acid) may not only help prevent cardiovascular disease, but may actually help in limiting the damage of an infarct (an area of coagulation of dead or dying tissue due to obstruction of blood circulation). And there are many other diseases where modification of eicosanoid metabolism by n-3 [Omega 3] fatty acids might have beneficial results. A reasonable intake of n-3 [Omega-3] fatty acids as part of a good diet could be obtained by eating fish two or three times a week or taking fish oil supplements that supply around 1 g EPA/day."

In the *Townsend Letter for Doctors*, Wayne Martin, B.S.⁸, states this: "I know a great lot about flax seed oil and I will tell some of it here. From Berlin east across Poland and Russia before about 1930, small food stores had presses for the pressing of flax seed oil. On pressing flax seed, about 40% of the oil was removed. The customer would be given the oil and the press cake which contained the other 60% of the oil. This press cake would be taken home and used in making black bread. The flax seed cake was what made bread black. Newly pressed flax seed oil has a pleasant nutty aroma. Let freshly pressed oil sit on the shelf for a week or so and brown phosphatides will settle out at the bottom of the bottle.

"I do not know how much oil one can get by pressing soya beans, but the oil one would get would have a most unpleasant and disagreeable odor. Also, as soya oil is higher in phosphatides, there would be about 3 times as much brown sludge settle out. Refined, this sludge is soya lecithin.

"I see nothing even remotely like what I have described here, being sold in health food stores as cold pressed oil. I suspect that what is being sold is refined oil, sold under a false label. By the by, with the exception of flax and olive oils, most crude oils have an unpleasant aroma and it is for that reason that they are refined.

"There is nothing wrong with hexane extraction of vegetable oils. . .

"If one wants some PUFAS (PolyUnsaturated Fatty Acids) [essential fatty acids] free from trans isomers one should eat food containing them such as walnuts which are 50% oil by weight."

"Cold-Pressed Unrefined Linseed Oil Puts Essential Nutrients Back on the Menu" was written by Mike Minarsich⁹. I hereby present it to you with his permission because it covers so well linoleic and linolenic fatty acids discussed in Prosch's article on nutrition⁴. (Also see "Proper Nutrition for Rheumatoid Arthritis," <http://www.arthritis-trust.org>.) Mike Minarsich writes: "Back in

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grandmother's day, the food on the dinner table was healthy and whole. She cooked the rice and scraped the carrots and snapped the beans and served greens fresh from the garden. Today, thanks to the technology of the modern food manufacturers, we have a vast selection of quick-fix processed foods that get us in and out of the kitchen fast. If we insist on a menu of convenience foods, we must rely on dietary supplements to protect us from the chemical additives and preservatives food processors put in and to replace what the food processors take out.

“The Essential Fatty Acids: Lost, Strayed or Stolen?”

“An important casualty of the modern age, stolen away by the food technologists, is the essential fatty acids. What they don't teach us in Nutrition 101 is that the typical American diet is dangerously deficient in the fatty acids, linoleic and linolenic, so important to life and health that they are medically and scientifically termed essential. What this means is that the human body cannot manufacture these fatty acids from any other nutrient or combination of nutrients. They must be supplied daily in the diet.

“Fish oil has received a lot of good press lately, but fish oil doesn't provide the essential fatty acids. The best grade fish oils provide EPA (Eicosapentaenoic acid) and DHA (Docosahexaenoic acid). Research shows that these Omega-3 fatty acids may provide protection against heart disease. But the fatty acids EPA and DHA cannot properly be termed “essential,” because the body can manufacture them as needed when supplied with” essential fatty acid, linolenic acid.

“Olive oil and the healthy 'Mediterranean Diet' have received their share of attention recently as well. Put olive oil in the 'no harm, no foul' category. This age-old natural oil is a mono-unsaturate with a surprising ability to help lower cholesterol levels. But olive oil, healthy as it is, doesn't [provides 8% linoleic acid] essential fatty acids. [If you buy it, be sure and get Virgin olive oil, not Pure: Ed]

“More and more people are recognizing that hydrogenated and partially hydrogenated fats and oils (present in margarine, vegetable shortening, salad oils, and hiding in literally thousands of commercially-processed food products) cannot be efficiently metabolized by the human body and may pose a health hazard.

“In the commercially-profitable production of oils, temperatures range from 200^o to over 500^oF. Enzymes and most natural nutrients are destroyed over 110^o. Even the U.S. produced so-called 'cold processed' oils are subjected to tremendous heat generated by the friction of a giant screw-press. Because no external heat is applied, commercial processors can legally label these oils "cold processed," even though the friction produces temperatures of nearly 250^oF. Petroleum based chemicals are commonly used to chemically extract oils, bits of which may remain in the finished product. It goes without saying that these chemically-extracted and/or heat-processed fats and oils do not provide the essential fatty acids.

“ Cold-Pressed Unrefined Linseed Oil

“It was [with] the landmark publication of *Fats & Oils The Complete Guide to Fats & Oils in Health & Nutrition*¹⁰ in the mid 1980s that the work of Dr. Johanna Budwig, Germany's premiere biochemist, first came to American shores. Unfortunately, this serious book failed to receive the attention it deserved and was largely ignored by the public. More recently Dr. Budwig's important findings have been prominently featured in *The Handbook of Natural Health, A Through Z*¹¹. Written especially for the lay person, this book documents the connection between artificial dietary fats and ill health and clearly explains how Dr. Budwig's long years of clinical research established the fact that the body must have the true essential fatty acids in order to function.

“Thirty years ago, working under the auspices of the German government, Dr. Johanna Budwig determined to uncover the causes

of the diseases of fatty degeneration. She began at the beginning of known research into the subject by studying the published findings of such greats as von Liebig (1842), Pflueger (1875), Hoppe-Seyler (1876), and Lebedow (1888). In succession, these early scientists showed the important relationship between the essential fatty acids, present in unrefined linseed oil, and the amino acids. What they found was that laboratory animals inevitably died on a high protein diet devoid of fats, and died on a high fat diet devoid of proteins. But when the animals were fed unrefined linseed oil and protein together, they quickly recovered robust health and vitality.

“It was at the turn of the century that Rosenfeld proved that a diet which provided only animal fats results in the fatty degeneration of the inner organs. Although the chemical differences between plant and animal fats were unknown back then, the premise of healthy fats (the essential fatty acids present in linseed oil) versus animal fats (now known as saturated fats) was confirmed.

“In 1920, Meyerhof (winner of the Nobel prize for Physiology & Medicine) showed that linoleic acid and sulphurated proteins formed an essential partnership in the internal workings of the body. In 1931, Warburg proved that the essential fatty acids were required in order for the body to heal itself of the fatty degeneration of cells. Szent-Gyorgy earned the Nobel prize in 1937 by showing that linoleic acid, in combination with sulphur-rich proteins, stimulated the vital oxygenation processes of the body.

“The medical scientists G.O. Burr and M.M. Burr finally isolated and identified the essential fatty acids. These biochemists showed that lab animals given the highest quality protein feed sicken and die, unless their diet is supplemented with the essential fatty acids. They also proved that the animals would recover rapidly, just as long as the essentials were put back in their diet in time.

“Unfortunately, that was the end of the research into the action of combinations of nutrients for the next fifty years. Dr. Budwig had reached a dead end as far as published research was concerned. During the intervening years, science identified innumerable nutrients which we recognize today as vitamins, minerals, enzymes, hormones, carbohydrates, amino acids, and trace elements. But research into the ways various combinations of nutrients interacted within the body stopped, until Dr. Budwig took up the torch where the others had dropped it so many years before.

“Without the need to repeat the work of her predecessors by experimenting with lab animals, Dr. Budwig set herself a Herculean task. She began collecting blood samples from many thousands of people. She took blood from those in the prime of health, as well as from those in the various stages of disease, including terminal cancer patients. Out of this meticulous research, a clear pattern took shape. Dr. Budwig discovered that, without exception, the blood of unhealthy persons always exhibited very low levels of linoleic acid.

“She found other blood constituent abnormalities as well. Sick people lacked the phosphatides needed for normal cell division. Because cancer is a condition where abnormal cells proliferate and grow wild, the implication of this discovery alone was enormous. Dr. Budwig also discovered that the blood of diseased persons lacked albumin, an important blood-producing lipoprotein. Albumin is a marriage of linoleic acid and sulphur-based proteins. Without this vital combination of the essential fatty acids and sulphurated proteins, blood analysis showed an unhealthy greenish-yellow substance in place of the red oxygen-carrying hemoglobin present in healthy blood. Without linoleic acid, the blood-producing mechanisms of the body can't manufacture hemoglobin. Without hemoglobin, cells and tissues become starved for oxygen.

“From Theory to Solution

“All that painstaking research led Dr. Budwig to one inescapable conclusion. She theorized that supplying the essential fatty acids

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in combination with sulphurated proteins could restore health. Could it really be that simple? She was on sound ground in selecting crude unrefined linseed oil as the richest source known of the essential fatty acids. Years of prior research by earlier scientists had already established that fact.

“She began clinical trials by feeding seriously ill cancer patients unrefined linseed oil paired with the sulphurated proteins present in cottage cheese. As weeks of this simple nutritional treatment progressed into three months duration, blood analysis showed that the phosphatides and lipoproteins previously missing began to reappear. Healthy red blood cells began taking the place of the unhealthy greenish-yellow constituents which had been there at the beginning of the trials. More importantly, malignant tumors gradually receded and shrank. Seriously weakened and debilitated cancer patients were no longer anemic and weak, but had been transformed into convalescents on their way to full health.

“Dr. Johanna Budwig had achieved an incredible breakthrough. Along the way, she had documented the dangerous effects of chemically-altered dietary fats and had also proven the life-preserving and restorative properties of the essential fatty acids mated with sulphur-rich proteins. In more than a decade of clinical use, Dr. Johanna Budwig has shown that unrefined linseed oil is a wonder worker of heroic proportions.

“Linseed Oil in Research

“As the news of Dr. Budwig’s nutritional crusade filtered out, scientists all over the world climbed on the bandwagon. Because unrefined linseed oil supplies such a rich concentration of the essential fatty acids, this golden oil is universally selected for research purposes in order to demonstrate the properties and benefits of linoleic and linolenic fatty acids. Today, the essentiality of linoleic and linolenic acid in human nutrition has been confirmed in any number of scientific studies.

“British scientists have shown that the addition of linseed oil to the diet insures that lipids (fats) are efficiently metabolized. Even when fed a grossly high-fat feed, sheep protected by linseed oil failed to evidence the harmful substances commonly present when fats can’t be metabolized by the body.

“Polish researchers have reported that replacing the saturated fats in the diet with essential linoleic acid provides strong protection against heart disease. The anti-clotting and cholesterol-lowering effects of these essential fatty acids were clearly demonstrated in this study.

“This effect was confirmed by researchers in Patna, India. Animals given linseed oil were free of cholesterol and atherosclerotic plaque, but the control group on polyunsaturated fatty acids showed a significant number of atherosclerotic lesions. The Indian study concluded that the properties of linseed oil were far superior to the polyunsaturated fats.

“Australian medical researchers determined that diets rich in linoleic acid reduce high blood pressure. Although most authorities recommend a diet containing less than 20% fat, animals on a 40% diet of the essential fatty acids showed lower blood pressure than animals on a standard diet. The scientists theorized that this effect was the result of improved prostaglandin synthesis, a known effect of linseed oil.

“The best news of all, confirmed by Dr. Johanna Budwig as well as a number of eminent scientists, is the way linseed oil works against cancer. Polish research shows that the fatty acids in linseed oil destroy cancer cells without harming the important white blood cells of the immune system. A three-year study underway in Austria confirms that linseed oil inhibits the proliferation of malignant cells. The Austrian medical scientists are calling linseed oil ‘a glimmer of hope in the

fight against cancer.”

“Word of Caution

“According to all the evidence, dietary linseed oil can rightly be classified as health-promoting, even important, preventive nutrition. However, it would be extremely unwise to self-diagnose and self-administer linseed oil as a substitute for informed medical care. For example, Dr. Budwig’s nutritional treatments were based on exhaustive blood analyses and were individually tailored to the condition of her patients.

“Another important fact to remember is that all the scientific research extant which shows the essentiality of linoleic and linolenic fatty acids is based on true cold-pressed and unrefined virgin linseed oil, which is not correctly produced in this country. These delicate seeds require a tender loving care if the end product is to contain the essential fatty acids and all beneficial properties. Ideally, the seeds themselves must be organically grown and free of any taint of agricultural chemicals. Producing a true unrefined virgin linseed oil is just not cost effective for mass merchandisers. The quality of linseed oil is adversely affected by light, heat, and exposure to air, making mass production of a high quality oil economically unattractive.

“Fortunately, there are imported linseed oils available in the U.S. which meet or exceed all the above criteria. Our European and Canadian cousins have been enjoying this golden dietary delight for a long time now.”

Gus Prosch, Jr., M.D. has long advocated certain nutritional patterns for good health, and one such is hereby presented. He says that the Essential Fatty Acids (EFA) are found in both the Omega-3 and the Omega-6 series. The chart that follows shows therefore a division between the two Essential Fatty Acids (EFA) such that good products and good results are shown by a square and bad products and bad results are shown by a circle.

In the Omega 3 series, a primary source for Alpha Linolenic Acid (ALA) is Linseed (or Flax Oil), Walnuts and Beans, Whole Grains, Chestnuts or Soybeans, and Pumpkin Seeds. These all produce in turn the beneficial substances titled A-Linolenic Acid (ALA), Linolenic Acid (LLA), A-Arachidonic Acid (AAA), Eicosapentaenoic Acid (EPA), Docosahexaenoic Acid (DHA) and Prostaglandin III Series. This sequence results in production of: potent anticlotting; tumor growth inhibitors; decreased blood pressure; decreased triglycerides; decreased cholesterol. They also keep clean arteries; convert energy for the brain; eyesight energy is converted; decrease fatty degeneration; and decrease risk of diabetes complications.

Sources of Docosahexaenoic Acid (DHA) and Eicosapentaenoic Acid (EPA) are Cold Water Ocean Fish: Sardines, Salmon, Mackerel, Cod, Halibut, Herring, Trout and Tuna. Eating these results in obtaining the beneficial and various long-chain fatty acids, some of which become Eicosapentaenoic Acid (EPA) and Docosahexaenoic Acid (DHA). The Docosahexaenoic Acid (DHA) results in Prostaglandin IV Series which has the beneficial effects of providing: potent anti-clotting; decrease in triglycerides; decrease in cholesterol; clean arteries; lowered blood pressure and slower tumor growth.

Eicosapentaenoic Acid (EPA) can be converted to Docosahexaenoic Acid (DHA). This conversion is helped by Vitamin B₆ and magnesium, and is inhibited if one has diabetes.

In the Omega-6 series, three interacting chains are shown. The following are known sources of Gamma-Linolenic Acid (GLA): mother’s milk, Evening Primrose seeds, Black Currant seeds, and Borage seeds. They result in the beneficial production of Gamma-Linolenic Acid (GLA) which results in Dihomo Gamma Linolenic Acid (DGLA) that results in the Prostaglandin I Series which has

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the following good effects: Is anti-inflammatory; decreases appetite cravings and fat; stimulates brown fat; prevents cancer growth; stimulates immune system; decreases blood platelet stickiness; decreases cholesterol; dilates blood vessels and bronchi; increases cyclic AMP; regulates calcium movement; increases lymphocytes; stimulates thymus; strengthens heart, and releases neurotransmitters.

Brown fat, as opposed to white or yellow fat, contains mitochondria which, when stimulated, has the function of burning up white or yellow fat. Bears turn on brown fat during hibernation, thus permitting them to survive without additional food. Babies have a proportionately larger amount of brown fat, for obvious reasons. White fat is chiefly an insulating layer that stores excess calories. Brown fat burns excess calories providing us with heat.

Dr. Prosch feels that there are probably more fat youngsters today, because of the widespread use of hydrogenated oils. These oils tend to block brown fat from functioning properly. Gamma-Linolenic Acid (GLA) stimulates or turns on brown fat. This factor plays a large part in obesity: too much hydrogenated oils, not enough Gamma-Linolenic Acid (GLA).

Certain factors and vitamins stimulate the production of Prostaglandin I. These include: Vitamins C, E, B₃, B₆, Zinc, Calcium, Biotin and Melatonin. On the other hand, various agents act to prevent the production of Prostaglandin I. These include: aspirin (ASA), steroids, lithium, hydrogenated oils, food additives, NSAIDS, ALA, EPA & DHA (by feedback mechanisms) and caffeine.

According to *JAMA*¹² two articles clearly illustrate that a very small amount of aspirin may be helpful for atherogenesis, but more is an inhibitor of Prostacyclin. These are "Multicenter Study Indicates One Aspirin Can Do the Job of Four in Preventing Stroke"; and "Why a Little Aspirin is Better Than a Lot." Apparently about 325 mg of aspirin will help to prevent myocardial infarction, but that more will not do the job. If arthritics can be satisfied with one ordinary tablet of 325 mg. per day, (5 grains), then they probably don't have arthritis in the first place, and they certainly then have no need to take handfuls of aspirin, as higher dosages will inhibit the good Prostacyclin as well as both Thromboxane A₂ and Leukotrienes, bad guys.

As Gus J. Prosch, Jr., M.D.¹³ said, "If you can get by with a baby aspirin a day, you'll be all right, you'll not restrict the prostacyclin!"

The main sources of Linoleic Acid (LA) are most cooking oils, Linseed oil, Safflower oil, Cottonseed oil, Sunflower oil, Peanut Oil, and Corn Oil. These result in beneficial Linoleic Acid (LA) that helps produce Gamma-Linolenic Acid (GLA) and Energy (stored fat)

Olive Oil provides chiefly Oleic Acid (Omega-9) which has other good effects. (Diabetics also see Garg, et. al. *NEJM*, Vol. 319, No. 13, p. 829-834 "Comparison of High-Carbohydrate Diet with A High-Monosaturated Fat Diet in Patients with Non-Insulin-Dependent Diabetes Mellitus," by Garg, et. al. and Vol. 319, No. 13, p. 862-864, "Dietary Therapy for Non-Insulin-Dependent Diabetes Mellitus," Gerald Reaven).

Note that Linoleic Acid (LA) can be converted to Gamma-linolenic Acid (GLA). This conversion is helped by: antioxidants, magnesium, insulin, Vitamin C, Vitamin B₃, Vitamin B₆, exercise and folic acid. However this conversion is prevented or slowed down by: *hydrogenated oils*, trans-fatty acids, high cholesterol, saturated fats, margarines, virus infections, carcinogens, radiation, glucagon, and advanced aging.

Of all those listed that will slow down conversion to Gamma-linolenic Acid (GLA), by far the most important is that of *hydrogenated oils*, Dr. Prosch says. Hydrogenated oils are killers — exceedingly dangerous to health over a period of years, and especially the way we use them, in almost everything on the market today.

Trans-Fatty Acids, Vitamin B₆, Zinc and Hydrogenated Oil

encourages the body to create Arachidonic Acid (AA) from Dihomo Gamma Linolenic Acid (DGLA); and Olive Oil, Eicosapentaenoic Acid (EPA), A-Linolenic Acid (ALA), and Vitamin A block the body from producing Arachidonic Acid (AA) from Dihomo Gamma Linolenic Acid (DGLA).

Primary sources of Arachidonic Acid (AA) are Red Meats, Dairy Products and Shellfish, which produce mixed blessings, as follows: Various fatty acids, convert to energy (stored fat) and also into Arachidonic Acid (AA); Arachidonic Acid (AA) produces the Prostaglandin II series, which has mixed blessings, resulting in beneficial *Prostacyclin*, Thromboxane A₂ which is non-beneficial, and Leukotrienes which are non-beneficial.

The beneficial Prostacyclin has the good effect of producing: vasodilation; decrease in platelet stickiness; decrease in stomach acid; and prevention of the spread of cancer.

Thromboxane A₂ creates vasoconstriction; platelet stickiness; increase in cyclic GMP and stimulation of tumor growth.

The Leukotrienes have the non-beneficial effects of: pro-inflammation; constricted bronchioles; increased mucous in bronchi; and constricted heart blood vessels.

The most potent vasodilator and agent that prevents platelet stickiness is *Prostacyclin*, Dr. Prosch says. Dr. Prosch also predicts that eventually studies using aspirin for heart patients will fail, because aspirin inhibits all three elements: Prostacyclin (good guy), Thromboxane A₂ (bad guy), and Leukotrienes (bad guy). In other words, in trying to use aspirin to rid the patient of the effect of surplus "bad guys" (Thromboxane A₂ and Leukotrienes) they will also be ridding the patient of a major and important "good guy" (Prostacyclin).

There are conflicting studies on this question, and one that seems to show contrary to Prosch's statement, to some extent, is *JAMA* "Why a Little Aspirin is Better Than a Lot"¹⁵ which claims to have shown that 325 mg of aspirin produces Thromboxane A₂ inhibition but does not inhibit the production of Prostacyclin within 24 hours. From these studies it is OK to take one 5 grain aspirin tablet a day, but not to take the large aspirin or more than one large aspirin day after day; but Dr. Prosch does not recommend more than about 2 grains per day, the size of a baby aspirin.

The conversion of red meats into Arachidonic Acid (AA) seems to be inhibited or slowed down by Imidazole compounds. (*The Rheumatoid Disease Foundation's* medical treatment protocol, among other medicines, recommends any one of five different 5-nitroimidazoles. See <http://www.arthritis-trust.org>). The production of Prostacyclin is helped by: Vitamin E, Selenium, and Eicosapentaenoic Acid (EPA) and is prevented by peroxide, fats, nicotine, and heavy metals.

Warren M. Levin, M.D.¹⁶ points to a serious consideration on both using proper essential fatty acids, and also when making "objective" scientific studies on their effects in mammals and humans: "What I believe has been ignored in the vast majority of these clinical studies (that will ultimately require that they all be done over again!) is the relationship of unprotected polyunsaturated fatty acids to lipid peroxidation and free-radical generation. The subsequent pathology wreaked by these avoidable by-products of increased polyunsaturate intake results in multiple clinical pathological expressions of degenerative disease.

"Certainly in the past 25 years or so, the intake of the Omega 6 family has increased dramatically, but much of it has been in the form of hydrogenated or partially hydrogenated materials which at best eliminates their biochemical role and frequently results in formation of trans-isomers, which literally 'gums up the works'. In addition, soy oil had been virtually the sole source of Omega 3 fatty acids in the United States. Now, the majority of that has been hydrogenated,

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resulting in a major epidemic of relative Omega 3 fatty acid deficiency . . . making it the most common nutrient deficiency in the U.S. today, with protean, unpredictable symptomatology.

“The addition of these critically important substances during clinical trials must be accompanied by mega-doses of antioxidants or the toxic effects of free-radical damage will overshadow the benefits! These effects will be more noticeable more quickly, in the very patients who need them the most, because diabetics and patients with arteriosclerotic disease and arthritis are already suffering the damage of advanced free-radical destruction, which will be compounded by additional unprotected polyunsaturates. . . . The protective effect of large doses of vitamin E is now understandable. The vitamin C question is no longer a question. Selenium, zinc, sulfur and B-complex deficiency cannot be ignored. All of these substances are critical to the proper function of the exquisite antioxidant cascade and all of them, and others, must be included in future experimental protocols if we are ever to determine the true effect of restoring a proper balance of essential fatty acids to the complex human body.”

The two simplified charts in this article were prepared by Gus Prosch, M.D. so that you can more easily understand the relationship of essential fatty acids to a good diet.

At one time I had to take *The Rheumatoid Disease Foundation's* recommended oral medicines every two to three months, suffering either a major or minor Herxheimer at the start of treatment for a brief period each time, and then feeling great again in a day or so. (See <http://arthritis-trust.org>. Initial applications usually last six weeks or longer.)

Eventually I paid attention to the nutritional guidelines laid down by our Medical Committee and also described by Dr. Prosch⁴. I no longer had to take the recommended medicines to halt the progress of Rheumatoid Disease, but I was left with various joint pain and inflammations as a result of the damage that had already been done to my system. Intraneural injections helped immensely, as per our treatment recommendations, as did better diet, life-style and use of Proliferative Therapy⁴. (See <http://arthritis-trust.org>.) I have been for several years unblest with too much inflammation of a non-Rheumatoid variety until recently.

I had been taking a “cold pressed” linseed oil of a common brand at our local supermarket “health food section” and even from our city’s well known and only health food store.

I took the linseed oil for two years — one or two tablespoons per day — as a matter of faith rather than a matter of actually noting decrease in inflammatory pain.

On reading Mike Minarsich’s⁹ article, quoted above, I called the telephone number [1-800-624-7114] given and requested information. From the information I subsequently ordered several varieties of what was claimed to be genuinely “cold-pressed oils”.

I was ready to try. Minarsich’s description of the physics of producing “cold-pressed” oils sounded reasonable.

I ordered Linseed Oil, Pumpkin Oil, Sunflower Oil, and Canola Oil.

The expense was considerably more than the Sunflower Oil and Linseed Oil I was used to purchasing, and certainly more costly than I could afford for cooking. I used a reasonable amount of Linseed Oil for salads, but I used considerably more Sunflower Oil for other cooking and for making popcorn.

Some folks love the taste of these “gourmet” oils, but not me. Taste, of course, is acquired, a conditioning process from childhood.

Linseed Oil I didn’t mind so very much and so I decided to try it as I might medicine, with a tablespoonful or so per day. The others, that I didn’t like, I would use on my salad until gone.

Most importantly, I was pleasantly surprised to find that a

tablespoonful of this new Linseed Oil per day kept the inflammatory pain away. Now the root of the lasting non-Rheumatoid pain had been revealed: lack of a sufficient amount of essential fatty acids!

Reduction of pain had never happened with the cheaper “cold-pressed” oil purchased at the supermarket or health food store!

The Rheumatoid Disease Foundation is not in the business of recommending one brand versus another. We cannot guarantee that one medicine or food will work for an individual, as every person is genetically different and has different needs. We can and do suggest that you try one thing or another — usually with your physician — to bring about wellness. And simply trying this new form of Linseed Oil in moderate amounts will be inexpensive. If it works, fine, if not, then don’t buy any more. You will have learned! If it does work, and you can find a cheaper source that also works, please let us know, and we’ll pass along the word.

What follows is taken from a Bio San™ flier sent to me by New Dimensions of Fountain Hills, Arizona 85268, [1-800-624-7114].

“**C-Leinosan Linseed Oil:** [Is] true cold-pressed, raw, unrefined extra-virgin linseed oil from the first pressing of the seeds.

“Linseed oil is acknowledged to be the world’s most abundant source of essential fatty acids (linoleic/linolenic), which have unfortunately been processed out of U.S. foods. The body cannot synthesize these protective and therapeutic fatty acids from any other nutrient or combination of nutrients, yet the essentials are required every day by many internal systems for healthy normal functioning. A daily measure of cold-pressed virgin unrefined linseed oil insures that the body is plentifully provided with the essential fatty acids.

“C-Leinosan Linseed Oil

Representative Fatty Acid Analysis

Linolenic Acid	62.59%
Linoleic Acid	14.52%
Oleic Acid	15.18%
Palmitic Acid	5.22%
Stearic Acid	2.49%

“Remember, the body attempts to compensate for a fatty acid deficiency, sometimes for many years. When a serious illness strikes, a nutrient deficiency is seldom pinpointed. Lack of the essential fatty acids leads to the diseases of fatty degeneration, including cancer and heart disease. C-leinosan (Linseed Oil) supplies the basic very essential linoleic and linolenic fatty acids every hungry cell in the body needs.

“Because linseed oil offers the richest concentration of linoleic and linolenic acids in nature, scientists around the world select this oil as the medium of choice for determining the properties and benefits of the fatty acids. Studies show dramatically that linseed oil can be considered a proven preventive and an active therapeutic.

“**Metabolic Function:** When fed a grossly high-fat diet, subjects protected by linseed oil were free of the harmful elements present in the blood when fats can’t be processed by the body. (Britain)

“**Heart Disease:** Replacing saturated fats in the diet with essential linoleic acid offers strong protection against heart disease. The anti-clotting and cholesterol lowering effects of linoleic acid were demonstrated in a landmark study. (Poland)

“**High Blood Pressure:** Hypertension was reduced in subjects supplied with essential fatty acids regularly, the effect of the improved prostaglandin synthesis stimulated by linoleic acid (Australia)

“**Staph Infections:** Linseed oil works against staph bacteria resistant to antibiotics, a problem in many hospitals. It was concluded that dietary linseed oil should prove a useful treatment for staph infections, especially for weakened patients. (Australia)

“**Cancer:** The fatty acids in linseed oil destroy cancer cells without harming the white blood cells of the immune system. (Poland)

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Calling Linseed oil “a glimmer of hope in the fight against cancer,” a three-year study shows linseed oil inhibits the proliferation of malignant cells. (Austria)

“**Broad Spectrum:** Dr. Johanna Budwig (Germany) proved that the blood of diseased persons exhibits very low levels of linoleic acid. Healthy blood contains the essential fatty acids and quality protein. Diseased blood does not. Without the vital combination of the essential fatty acids and sulphurated proteins, the production of hemoglobin (oxygen-carrying red blood cells), is impaired. Cells and tissues suffer the results of hypoxemia (oxygen-starvation).

“In over a decade of clinical application, the dietary therapy (linseed oil paired with protein-rich low-fat cottage cheese) -- used so successfully by Dr. Budwig against the diseases of fatty degeneration (cancer, heart disease) has brought her international fame as a healer of heroic proportions.”

[**Note:** Sources of studies cited: *The Fatty Acid Syndrome* (Dr. Budwig), *Fats & Oils* (U. Erasmus), *How to Fight Cancer & Win* (W. Fischer), *Extend Your Life* (H. Hunter).]

BioSan oils are claimed “to be produced under rigid quality control procedures to preserve and protect flavor, nutrient value, and beneficial properties. They are warranted strictly cold-pressed in small batches at 30° C, resulting in fully biologically-active oils.

“Because the quality of seed oils are adversely affected by light, heat, and exposure to air, the BioSan oils are processed in darkness using special infrared lighting. Production and packaging are completed in “clean rooms” of the highest pharmaceutical standards. The oils are decanted into sterilized impermeable amber glass, not plastic.

“**Pumpkin Seed Oil:** Pumpkin seeds are an excellent source of both essential fatty acids, second only in richness to linseed (flax) oil. This oil supplies 43% linoleic acid; 16% linolenic acid.

“**Canola Oil:** This oil has 21% linoleic acid and 12% linolenic acid, and is darker in color than the refined product.

“**Sunflower Oil:** This oil contains natural vitamin E plus 60 to 73% linoleic acid and 0.2 to 2% linolenic acid. It has essentially the same flavor as sunflower seeds, contrary to the refined product.

“**Safflower Oil:** This oil is 74% linoleic acid and 0.5% linolenic acid.

“**Basic Nutrition:** To supply your body with the essential fatty acids every day, take 1 to 2 tablespoons Linseed Oil with 1/4 to 1/2 cup low-fat cottage cheese. Mix them together, or take a spoonful of this liquid and eat the cottage cheese. You may enhance the cottage cheese with flavorings of your choice, if you prefer.

“**Muesli:** In a blender, whirl 1/2 cup low-fat cottage cheese, 3 to 5 tablespoons Linseed Oil (Or Pumpkin Seed Oil), 1 grated apple, a handful of chopped almonds (or hazelnuts). Add a dollop of honey, if you like. Serves two people. This is Dr. Johanna Budwig’s personal recipe, as featured in her books *Cancer—A Fatty Acid Problem* and *The Oil-Protein Diet for Cancer Patients*.

“**Baking** You may use these oils of your choice in baking because the moisture in the batter prevents the dispersed oils from exceeding healthy temperatures in the oven.

“**Saute' & Stir-Fry:** To gently saute' or quickly stir-fry, preheat pan (not aluminum) on low to medium heat. Add equal parts of water and the oils of your choice. The water will prevent the oil from exceeding safe temperatures. (If the mixture boils and “spits”, the pan is too hot.) Add ingredients for saute or stir-fry and cook as usual.”

New Dimensions suggests: There should be no difference between flax oil and linseed oil, but some dealers will sell “flax oil” that is neither linseed or flax oil.

While linseed oil has been and is still used for paints, it is the processing and the leads placed in the paint linseed oil that makes

it unfit for human consumption.

There are no good plastic containers for holding these oils and maintaining their quality. Insist on opaque glass bottles.

In a later BioSan pamphlet is the following:

“**Where We Went Wrong** - Modern methods have made the production of fats and oils cost-effective. Cooking the seeds, crushing them mechanically, and then running the resulting mash through a giant press, or passing it through a chemical solvent, extracts every drop. The fact that these harsh manufacturing procedures chemically alter molecular structure is ignored.

“In the refining process, caustic chemicals remove important free fatty acids, phospholipids, carotenoids and natural antioxidants. The oil is then chemically bleached, deodorized and ‘winterized.’ Chemical antioxidants, stabilizers and preservatives are added. But there’s worse to come.

Hydrogenated Oils - Hydrogenation saturates all fatty acids with hydrogen. Using a metal catalyst, tremendous pressure is applied at temperatures exceeding 400° F. for up to 8 hours. Because the final product is inert (dead), it doesn’t spoil. But it contains chemically-altered bits of fatty acids, which the body doesn’t know how to handle, and traces of metal catalysts.

“**Partial Hydrogenation** - A liquid oil is made solid or semi-solid by adjusting the length of the process. Margarine and shortening are partially hydrogenated. Partial hydrogenation is worse than *full* hydrogenation. Here’s why:

“Molecules become hydrogenated erratically, leaving behind dangerously altered substances when the process is halted. Many are harmful.

“**Why You Should be Concerned** - Over half (57%) of our dietary fat comes from processed fats and oils. It has been established that these alien fats do not provide the Essential Fatty Acids (EFAs) the body requires every day, and we know they cannot be efficiently metabolized by the body.”

I haven’t seen the study that produced the 57% figure quoted above, but I’d wager that far, far more than 57% of our dietary fat comes from processed fats and oils!

Ray Peat, Ph.D. in *Townsend Letters for Doctors*, February/ March 1989, in a letter, warns folks against taking Linseed Oils in the amounts advocated by Udo Erasmus in *Fats and Oils*.

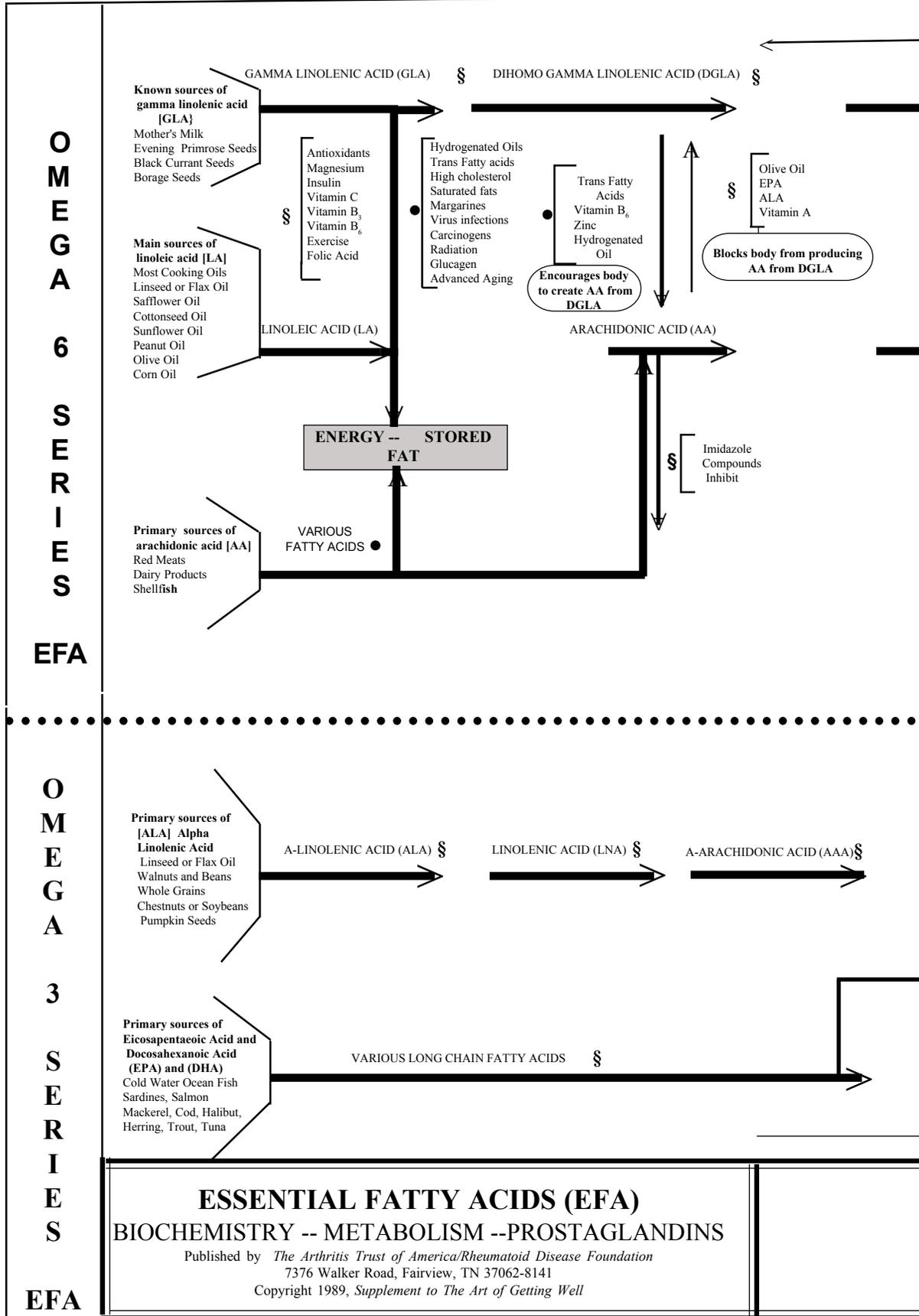
Peat says that large quantities of such oils are known to cause: impaired brain development and learning; damage to skin and bones; accelerated aging and age-pigment accumulation; damage to the circulatory system; increased cancer incidence; suppressed immunity; and endocrine dysfunction.

I suspect that differences lie in how deficient each person is in essential fatty acids and also in how well they absorb and utilize them. A doctor who gives three to six capsules of Oil of Evening Primrose to arthritics is undoubtedly doing the correct thing, but there are probably many arthritics or former arthritics, like myself, and cancer victims, whose tissues have become so starved for essential fatty acids that Udo Erasmus’ quantities are easily and safely taken.

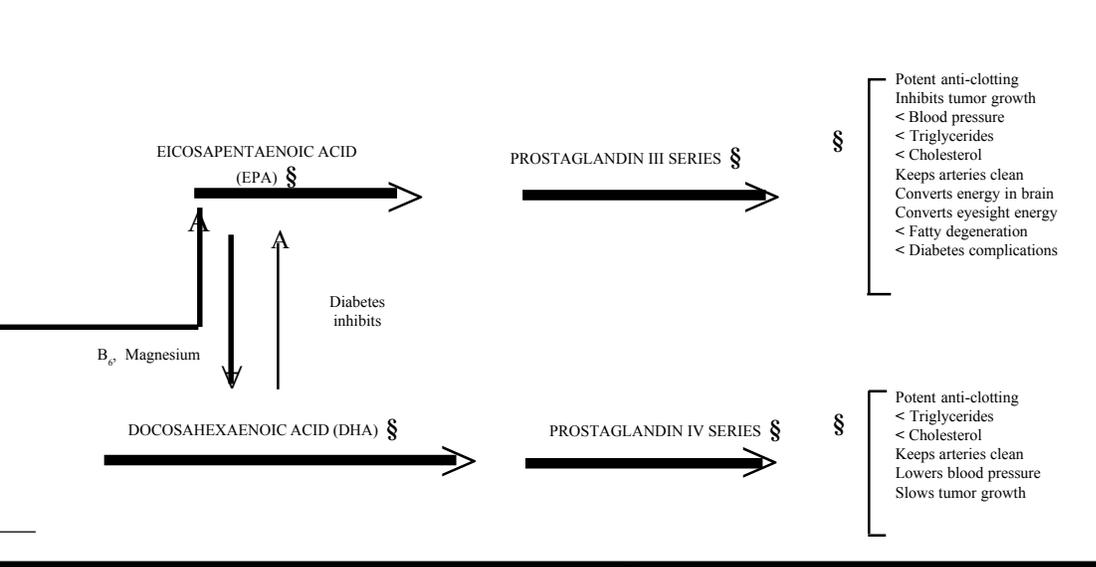
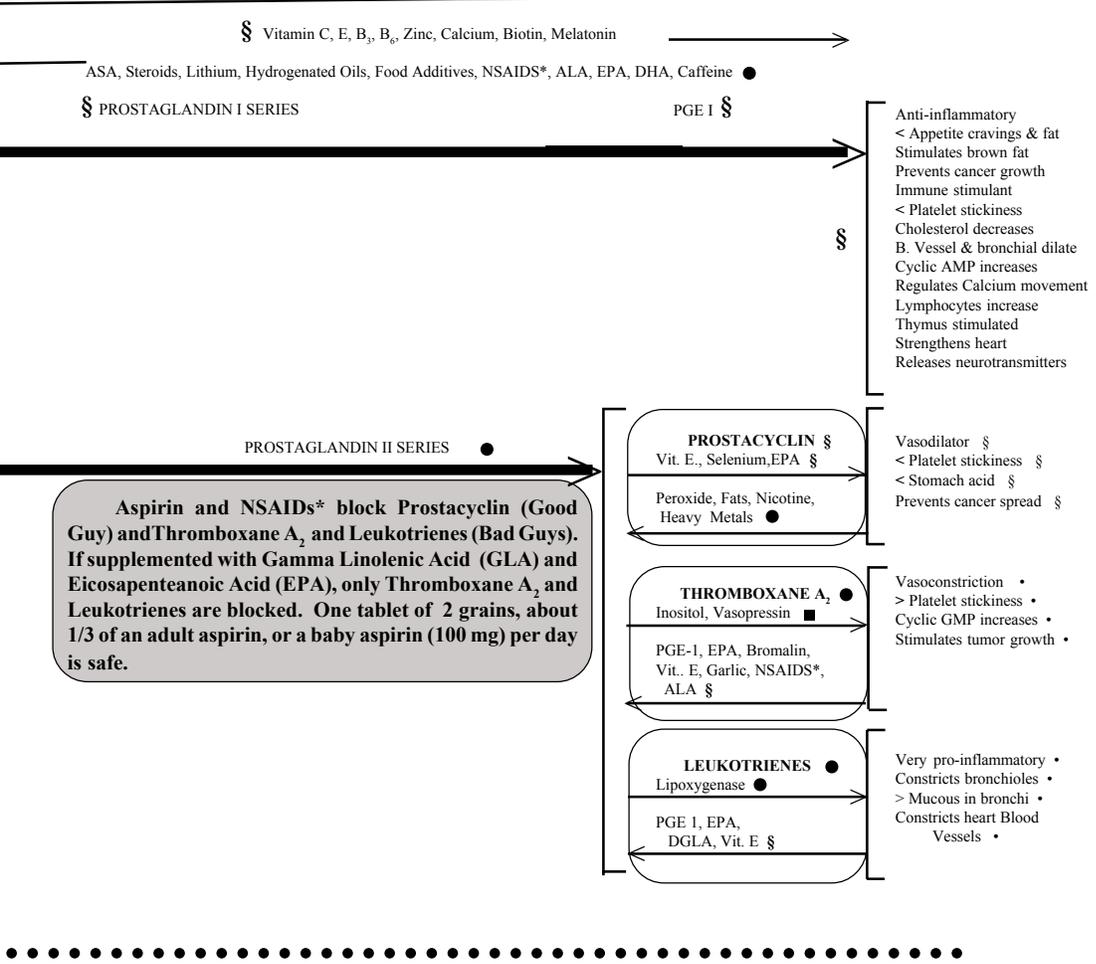
Evidence also seems to exist that men need more of certain Essential Fatty Acids (EFA) than do women.

I suspect, too, that we of the World War II vintage, and after, belong to a special class of humans wrongly sold on margarines and other so-called polyunsaturates for all our “health” needs.

Some folks unquestionably get by on just a good diet, containing the right fatty acids, or ingredients convertible to them. A few small capsules per day of the right oils may suffice for others. Arthritics — I am beginning to believe -- and this needs verification by lots of patients — probably require larger quantities of essential fatty acids, in the tablespoons per day range.



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This Chart Created by
Gus J. Prosch, Jr., M.D.

§ =GOOD
● =BAD
< = decreases
> = increases
* = NSAIDS (Non-steroidal Anti-inflammatory Drugs)

Medical data is for informational purposes only. You should always consult your family physician, or one of our referral physicians prior to treatment.

I take one to two tablespoons of linseed oil daily now, one mixed in cottage cheese (all essential amino acids), the other in the morning before eating. I have noted drastic differences in otherwise sustained inflammatory conditions, and ability to strengthen muscles again, after a long eight-year siege of weakening them.

Six or eight small capsules of expensive Oil of Evening Primrose would hardly have sufficed, as I have tried that approach over a long period, also.

But Ray Peat's claims are so serious, and as the potential benefits of taking the oils for arthritis and others are so great, that I am presenting two rebuttals, one by Robert Walberg¹⁷, and the other by Udo Erasmus, Ph.D.¹⁷.

Robert Walberg says: "Mr. Peat's article mentions linoleic acid as causing problems ranging from brain impairment to suppressed immunity. The point Mr. Peat has missed is that Flax oil contains only small amounts of linoleic acid. Flax oil is predominantly *linolenic* acid, a substance proven to be essential in brain development and learning, slowing aging and age pigment accumulation, repairing damage to the circulatory system, selectively kills certain cancer cells, increasing immune response, coincidentally all the things Mr. Peat has claimed contrary.

"It appears Mr. Peat has got linolenic acid (Omega-3) confused with linoleic acid (Omega-6). Linoleic acid (common in most oils) is definitely involved in promotion of cancer due to lack of production of cyclooxygenases and increased PGE 2 [Prostaglandins II] production to some extent. Dr. Karmali found the best ratio of Omega-6 to Omega-3 is one to one for preventing cancer and that Omega-3 works by preventing immunosuppression of cell-mediated immunity. Flax oil typically contains 55-60% Omega 3."

Robert Walberg then attaches the following references:

"*JNIC*, Vol. 77, #5, Nov. 1986; Selective Killing of Cancer Cells *AJCN*, #44, Sept. 1986, page 336-340; Linolenic Acid and Blood Pressure

Nutrition Today, Mar to June 1988, pages 10-19, 12-18.

Lancet, Vol. 2, Nov. 7 1964

JAOCs, Vol. 6, #4, April 1988, Page 509

Prostaglandin Leukotrienes and Medicine, 1985, Pages 177-186

SA Medical Journal, Vol. 62, Oct. 1988 page 500 and Oct. 30, 1982, page 63."

Udo Erasmus says: "I make a distinction between what I report (from research and clinical findings) and what I recommend (based on what I understand about health). I have only recommended one oil: *fresh flax seed oil* (which is high in the Omega-3 alpha linolenic acid and low in Omega-6 linoleic acid).

"Made by a company called Omega Nutrition, the flax seed oil that I have recommended is mechanically pressed from certified organic flax seeds by an especially painstaking light-free, oxygen-free, low-temperature method (OMEGAFL0). The oil is unrefined, packaged in completely opaque containers (to prevent destruction by light), dated with a 4-month shelf life, and shipped refrigerated.

"I have recommended this oil because it sets a precedent and a new direction in the manufacture of oils. If human health is really our concern, this is how, in my opinion, oils need to be made. In *Fats and Oils*, I devoted 2 chapters to making and labeling 'healthy' oils. Omega Nutrition exceed all of my specifications. I have no legal or financial affiliation with the company, and do not profit from their sales.

"I distinguish between *linseed oil* and *flax seed oil*. Linseed oil is the name used in the industry for paint-grade oil, pressed from flax seeds without the care that human consumption requires. Linseed oil is considered inedible, but finds its way into our food supply nevertheless, both in bottles and in capsules.

"Flax seed oil, on the other hand, is the name we give to oil made with the care required for human health, marketed fresh, refrigerated, and hopefully shipped direct to the retailer or consumer.

"I do not recommend any brands of oil called linseed (flax) or flax (linseed). After only 2 years of production, there are already several imitations on the market, none of which I recommend. Quality and greed carry us in different directions.

"The flax growers like a distinction to be made between the paint-grade and the human-health product, because they, too, don't want the confusion of terms and products.

"From the health point of view, I do not recommend any refined oils (because of destructive processing and removal of nutrients), *any* non-organic, unrefined oils (because of pesticide residues), or *any* oils packaged in transparent plastic containers. One could hardly call me a friend of the billion-dollar oil industry.

"I recommend a total of 15 to 20% of calories from fats in the diet of most people. This is 10% lower than the recommendation of the American Heart Association, but in line with traditional diets not leading to cardiovascular disease. If 2% of daily calories were Omega 3's, 4% Omega 6's (I suggested 3 to 10% in *Fats and Oils*), 5% mono's and 5% saturates, they might constitute reasonable ratios for health. The body adapts to fluctuations in the ratios. It cannot handle too many saturates or too many Omega 6's. It needs both essential fatty acids. A balance is prudent.

"Pritikin's diet, in my opinion, was too low in total fats, too low in Omega-3's, and too low in Vitamin E. His diet is useful in the treatment of obesity and atherosclerosis, under supervision. It fails as a way of life for healthy people.

"I strongly disagree with the 'fat is poison' sentiment. There is too much research evidence for the essentiality of fats and of essential fatty acids in the diet. Too little or too much results in problems.

"I agree that an excess of the Omega-6 linoleic acid, especially from refined oils, fried Omega-6 oils, and Omega-6 containing diet lacking antioxidants leads to health problems. I consider this now established fact important enough to emphasize in every lecture.

"Finally, a word about oxidation and anti-oxidants. In the last few years, we have given anti-oxidants a lot of deserved attention. In the process, however, we have almost forgotten that animal and human life *depend* on oxidation. Oxidation produces energy. Lack of oxidation results in lowered metabolic rate, lower energy levels, and degeneration.

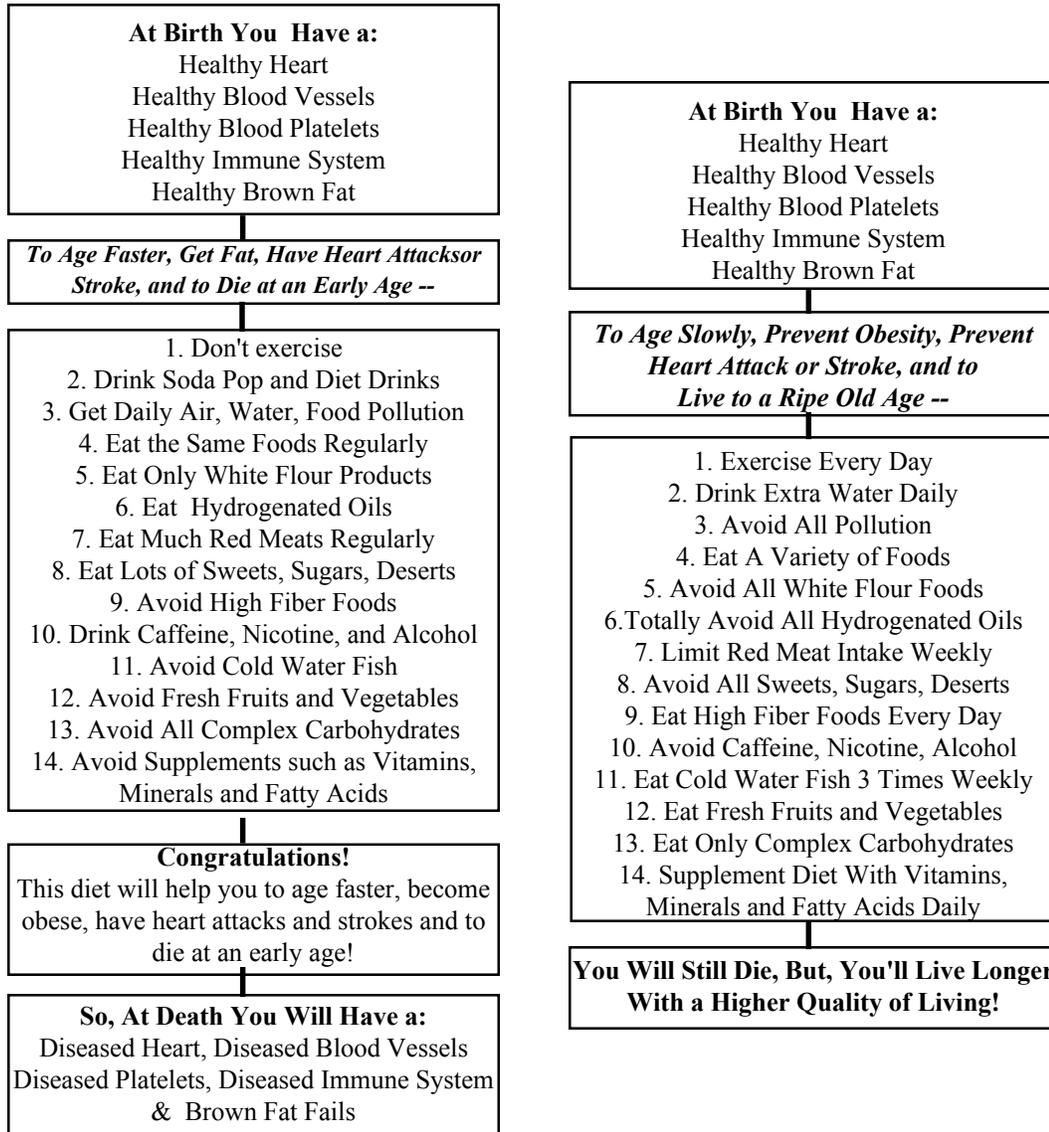
"The essential fatty acids (especially the Omega 3 essential fatty acid alpha-linolenic acid) constitute the highest level oxidants in human nutrition. We require them for oxidation-dependent life.

"In the final analysis, the energy which keeps us alive is generated by a finely regulated balance of oxidation and reduction, by a proper balance of oxidants and anti-oxidants. The fats and oils, in their natural form, are a necessary part of this balance."

Quoting Dr. Gerson's Book, *A Cancer Therapy, Results in Fifty Cases*, p. 246, in her letter "Sales Pitch for Linseed Oil," Lodi, M.D.¹⁸ states, use "Linseed oil, cold-pressed (food grade), 1 Tablespoon each morning and evening. After 4 weeks reduce to 1 Tablespoon."

I asked Gus Prosch, Jr., M.D. what he recommends for his patients. He says, "I recommend 240 mg of Gamma Linolenic Acid (GLA) per day, which can be found in either 1 Borage Oil capsule per day or 6 Evening Primrose Oil capsules per day, the quantity determined by its source." [Keep in mind that much that is called "Evening Primrose Oil" or "Borage Oil" sold in America is actually soybean oil, or some other wrong ingredient, as there are no labeling standards established and accepted by the FDA for the names "Evening Primrose Oil" or "Borage Oil." Check with your alternative medicine physician for a reliable source. Ed.]

Dr. Prosch also "... recommends 900 to 1,000 mg

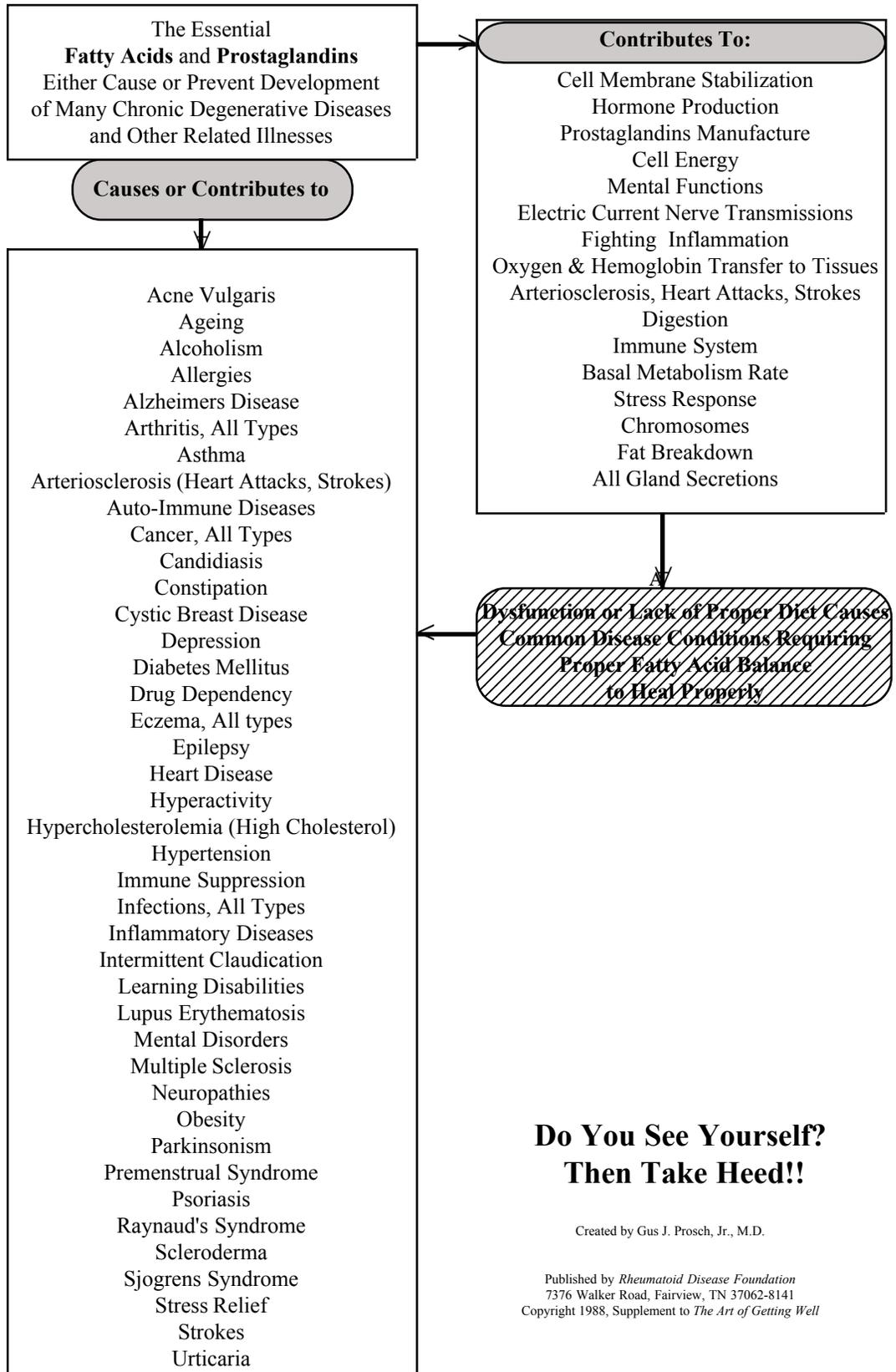


Remember!
Your Health
is
Now

What You Have Previously Eaten, and Thought!

Created by Gus J. Prosch, Jr., M.D.

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The Art of Getting Well



**Do You See Yourself?
Then Take Heed!!**

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Eicosapentaenoic Acid (EPA) per day and 500 to 600 mg of Docosahexaenoic Acid (DHA) per day.”

The Flaxseed oil that has satisfied me so well is 8.5 ounce bottles of C-Leinonsan™ from New Dimensions Dist. Inc., 16548 E. Laser DR., A-7, Fountain Hills, AZ 85268.

Another source is Spectrum Naturals, 133 Copeland Street, Petaluma, CA 94952. One must be careful when purchasing Spectrum Naturals because many of their products are processed and bottled to compete with the billion dollar commercial market that is known to be destructive to health. They have two lines of products, one satisfying requirements of good health, and the other heated to 450°F for the mass market.

The kind recommended is found in the refrigerator of health food stores as Veg-Omega-3™, also in 8.5 Fluid Oz. bottles.

Their advertising states that Veg-Omega-3 is: rich in precious omega-3s, twice as rich as fish oil, 5 times more stable than fish oil, less expensive by 1/5th-1/12th than fish oil, certified organically grown by O.C.I.A., guaranteed free of pesticides and PCBs, completely protected from light and air, free from trans-fatty acids and free radicals, cold pressed at 96°F, unrefined with natural beta-carotene intact, unbleached, free of additives, bottled with pressing and expiration dates on the label, and unconditionally guaranteed to be fresh when kept refrigerated and used before expiration date.

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Vitamin F

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Sources are given in references.

Authors of contributions\quotations are alphabetically arranged; major author, if any, is underlined.

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The history of the discovery of vitamins and other nutritional factors is not only fascinating, but it is also very dramatic. For example, the story of vitamin B₁ goes back to 1897 when Dr. Christiaan Eijkman, a Dutch physician working in Java, observed pigeons hobbling around the hospital courtyard. These birds demonstrated a crippled gait similar to that of the sick inmates. Dr. Eijkman knew that the pigeons were eating the hospital table scraps, and he surmised that it was the polished rice that was causing the terrible disease called beriberi, in both the patients and the pigeons. When unrefined rice was fed to the pigeons, they became well again. Eventually the experiment resulted in the discovery of vitamin B₁, a starting point in the science of nutrition.

From the 14th to the 19th century scurvy took the lives of millions annually in Europe and Asia. From 1600 to 1800 it is estimated that fully a million English sailors succumbed to this disease. In 1747 James Lind, a medical officer of the British navy aboard H.M.S. Salisbury, made a trial of a half dozen popularly recommended treatments. One of them consisted of two oranges and one lemon per day. Of the various treatments tried, only the citrus fruits worked, and some of the sailors eating them recovered in as little as six days.

Dr. Lind, like many other researchers, did not live to see his discovery given general acceptance. He died in 1794, and in the following year the British Admiralty made provisions for a daily ration of lime or lemon juice to be given all sailors in the navy, and in consequence, even to this day, the sailors of the British navy are dubbed “limeys”. During the time between Dr. Lind’s discovery and its practical applications in 1795, nearly 200,000 British sailors died needlessly of scurvy. (Vitamin C was discovered and isolated in 1928.)

Essential unsaturated fatty acids have never been recognized as a vitamin although some in the health field have referred to them as

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"vitamin F".

An essential fatty acid may be defined as a fatty acid that is required for normal health and growth, is manufactured in the body in insufficient quantities or not at all, and must therefore be supplied by food sources. There has been some controversy about the number of essential fatty acids, with a maximum of three being mentioned: linoleic acid (LA), linolenic acid (LNA), and arachidonic acid (AA).

Linoleic acid cannot be produced by the body at all. Linolenic and arachidonic acids can be manufactured under certain conditions, for example with sufficient availability of linoleic acid and the presence of certain vitamins and minerals. Most researchers today consider only linoleic and linolenic acids to be essential fatty acids.

It must be noted that there are numerous fatty acids found in food that are of varying degrees of biological importance. Traces of no less than 500 have been identified in butter.

There are two main classes of fatty acids: saturated and unsaturated. Hard fats contain mostly saturated fatty acids, while liquid oils are made up predominantly of unsaturated fatty acids. The unsaturated molecule has an "opening" into which an oxygen atom may enter. When this happens, the fat or oil becomes rancid. This "opening" may be "closed" artificially by forcing in an atom of hydrogen in a process called hydrogenation. This helps to prevent rancidity and also causes the oil to become "hardened".

Unsaturated fatty acids are often categorized as Omega 3, Omega 6 and Omega 9 fatty acids. Table 2 summarizes this information and also lists some of the principal food sources for each. Table 1 lists examples of saturated fatty acids (all non-essential, i.e., they can be made by the body if required), non-essential unsaturated fatty acids, and essential unsaturated fatty acids [there are only two -- LA (linoleic acid) and LNA (linolenic acid)].

The essential fatty acids are involved with the production of life energy in the body from food substances. They govern growth, vitality and mental state. They form a structural part of all cell membranes, and they have a part in maintaining the fluidity of membranes, which when stimulated, can generate bioelectric currents which travel along the cells to other cells, transmitting messages.

Essential fatty acids are the precursors of the prostaglandins, hormone-like substances which regulate many functions of all tissues on a moment to moment basis, including blood pressure, platelet stickiness, and smooth muscle contraction.

Essential fatty acids are involved in the transport of excess cholesterol, and they help keep the body depot fats fluid.

They are involved in generating the electrical currents that make the heart beat in orderly sequence.

They appear to regulate chromosome stability, and may have functions in the starting and stopping of gene expression. They help govern the movement of chromosomes during cell division and they are required in the formation of the new cell membranes which separate the two daughter cells after a cell has divided.

Essential fatty acids are involved in the function of the immune system, which acts to fight infections and confers resistance to disease and allergies.

In short, life without essential fatty acids is impossible and when essential fatty acids are deficient, we can expect a diversity of health problems.

As shown in Tables 2 and 3, the best sources of linolenic acid are flax seeds, pumpkin seeds, walnuts, soy beans and dark green leaves.

The best sources of linoleic acid are safflower, sunflower, and in sesame seeds, wheat germ and corn germ oil and walnuts.

Since the essential fatty acids are easily destroyed by light, air and heat, great care is required in processing, packaging and storing of the oils containing them. Unfortunately, the processes used commercially are designed to produce oils that are light, clear, tasteless and everlasting.

The seeds are crushed and then cooked for up to two hours at varying temperatures. When they are pressed, the pressure that is created causes the seed mass to be heated further. The higher the temperature and pressure, the better is the oil yield.

Some oils are extracted, using a solvent such as hexane.

The next step is degumming which removes phospholipids, including lecithin.

Next, free fatty acids are removed, using caustic soda (Draino®).

Bleaching then removes the pigments chlorophyll and beta-carotene.

Deodorization removes aromatic oils and more free fatty acids, as well as pungent odors and unpleasant tastes, which were not present in the natural oil in the seeds before the processing began. Deodorization takes place at between 460 and 520 degrees Fahrenheit.

The next step may be hydrogenation or partial hydrogenation.

One of the best ways to ruin the nutritional value of an oil is to hydrogenate it. In this process the oil is reacted at high temperature and under pressure with hydrogen gas in the presence of a catalyst such as nickel. If the process is brought to completion, the resulting product will contain no essential fatty acid, but it also does not contain trans-fatty acids to interfere with essential fatty acid activity in the body. Partial hydrogenation results in a high proportion of trans-fatty acids and numerous other altered, unnatural substances that interfere with normal biochemical processes. (In Holland, the sale of margarines containing trans-fatty acids is prohibited by law.)

Natural fatty acids have a molecular structure called cis-configuration in which both hydrogen atoms attached to the carbon atoms of a double bond are on the same side of a molecule. When subjected to high temperatures, the molecule is "twisted" so that the hydrogen atoms appear on opposite sides. The results of this minuscule change are quite drastic: In biological systems, the trans-form "half-fits" into enzyme and membrane structures. It can't complete the functions that the cis-form performs, and at the same time, blocks out the cis form. Thus the trans-forms take up the space, but won't do the work of the cis-essential fatty acids.

The trans-molecules are more sticky. For this reason, trans-fatty acids encourage fatty deposits in the arteries, liver, and other organs, and trans-fatty acids also make platelets more sticky, increasing the likelihood of a clot in a small blood vessel, leading to strokes, heart attacks, or circulatory occlusions in other organs.

Trans-fatty acids change the permeability of membranes. This means that some molecules, which ordinarily would be kept out of the cell, can now get in, and others which normally should remain in the cell can now get out.

Trans-fatty acids disrupt the vital functions of the essential fatty acids, and worsen essential fatty acid deficiency by interfering with the enzyme systems which transform the fatty acids into other important molecules, such as the prostaglandins.

Trans-fatty acids interfere with certain enzymes that are needed to detoxify insecticides, and they increase the activity of some enzyme systems that have the ability to potentiate carcinogens.

About 95% of the average intake of trans-fatty acids comes from hydrogenated vegetable oil products, and the rest from animal products, mainly beef and butter fat. The annual consumption of trans-fatty acids is almost twice as much as the total intake of all other unnatural food additives put together. The two main products from which we get trans-fatty acids are margarines and shortenings or shortening oils, both of which are made from partially hydrogenated vegetable oils. These appear literally in thousands of processed foods -- bread, rolls, crackers, pies, pretzels, cookies, donuts, breadsticks, muffins, breadcrumbs, stuffing, waffles, pop tarts, hamburger helper, biscuits, wheat thins, potato chips, candy bars, nondairy creamers, salad dressings, peanut butter, mayonnaise, ad infinitum.

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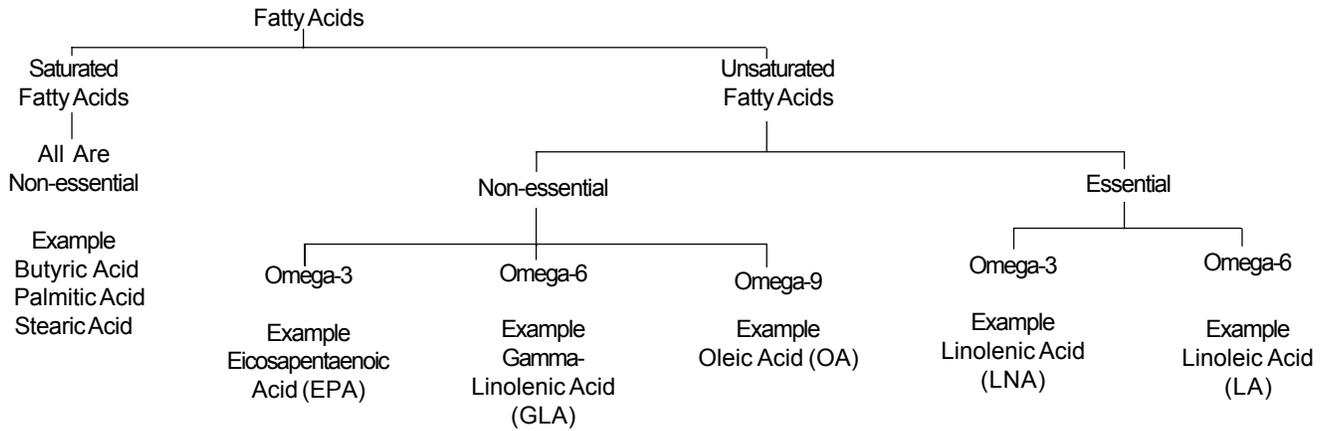


Table 1

Unsaturated Fatty Acids

Fatty Acid	Number of Times Unsaturated	Food Sources
Omega-3		
LNA ^(a) (Linolenic Acid) ^(b)	3	Flax Seeds, Pumpkin Seeds, Walnuts, Soy Beans, Dark Green Leaves Seeds of certain members of the Borage family Cold-water Fish (Salmon, Sardine, Mackerel, Trout)
SDA (Stearidonic Acid)	4	
EPA (Eicosapentaenoic Acid)	5	
DHA (Docosahexaenoic Acid)	6	
Omega-6		
LA ^(a) (Linoleic Acid)	2	Safflower, Sunflower & Sesame Seeds, Wheat & Corn Germ Oils, Walnut Evening Primrose Seed, Black Currant & Borage Oil, Mother's Milk Liver, Brain, Meats Oils of certain fish
GLA (Gamma-Linolenic Acid)	3	
AA (Arachidonic Acid)	4	
DPA (Docosapentaenoic Acid)	5	
Omega-9		
OA (Oleic Acid)	1 ^(c)	Olive & Almond Oil, Pecan, Cashew, Filbert, Avocado

(a) Essential Fatty Acid

(b) Sometimes called "Alpha-Linolenic Acid"

(c) 1x unsaturated = monounsaturated

Table 2

Name	Fatty Acid Composition of Different Seed Oils (Percent)			Saturated
	Linolenic Acid (LNA)	Linoleic Acid (LA)	Oleic Acid (OA)	
Flax	58	14	19	9
Pumpkin	15	42	34	9
Soy Bean	9	50	26	15
Walnut	5	51	28	16
Evening Primrose		81 ^(a)	11	8
Safflower		75	13	12
Sunflower		65	23	12
Corn		59	24	17
Wheat Germ		54	28	18
Sesame		45	42	13
Almond		17	78	5
Olive		8	76	16

(a) Includes 9% Gamma Linolenic Acid (GLA)

Table 3

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Consumers are being badly misled when it comes to advertising fats and oils. For example "Cold Pressed" only means that no additional heat was used during pressing; no mention is made of the heat generated by the process itself.

"No Cholesterol" has no meaning whatsoever when it comes to vegetable oils since no products of plant origin contain any cholesterol.

Margarine "for the good of your heart" -- there is not a single shred of evidence to back up the claim that margarine is good for the heart, or that it has any health benefits. Heart disease and cancer deaths have increased at a rate parallel to the increase in margarine sales and the sale of other hydrogenated and partially hydrogenated products.

But the worst deception relates to the amounts of unsaturated fats listed on margarine labels. The figures given include various unnatural unsaturated fatty acids, including the trans-polyunsaturates. These not only are not health-giving, but are antagonistic to the health-giving essential fatty acids. They compete for enzymes, produce biologically non-functional derivatives, and interfere with the work of the essential fatty acids in the body, food processors get away with this deception because the chemical structure of these trans-fatty acids does indeed qualify as "unsaturated". However, they act as saturated fats, and nutritionists who are aware of the situation sometimes redefine the trans proportion as "saturate equivalent".

Table 2 lists a number of unsaturated fatty acids which are not essential fatty acids but are nevertheless of great value. For example, the Omega-3 fatty acids Eicosapentaenoic Acid (EPA) and Docosahexaenoic Acid (DHA) are associated with clean arteries and absence of fatty degeneration diseases. They can both be manufactured by the healthy human body, albeit slowly, from linolenic acid, but various degenerative conditions impair the body's ability to do so.

Eicosapentaenoic Acid (EPA) and Docosahexaenoic Acid (DHA) are found in cold-water fish such as salmon, sardine, trout and mackerel. However, if the fish are raised on fish farms, the amounts of these Omega-6 fatty acids are greatly reduced.

The Omega-6 fatty acid Gamma-Linolenic Acid (GLA) is the result of the body's first biochemical step in the transformation of Linoleic Acid into the PG1 family of Prostaglandins. Members of this series perform many important functions in different tissues of the human body, e.g., keeping blood platelets from sticking together, acting as a diuretic, opening up blood vessels, slowing down cholesterol production, preventing inflammations, making insulin work more effectively, improving nerve function, regulating calcium metabolism, improving functioning of the T-cells of the immune system, etc.

Certain dietary deficiencies and disease conditions block the enzyme (delta-6-desaturase) that catalyzes this chemical reaction, thus preventing the transformation of Linoleic Acid (LA) into Gamma-Linolenic Acid (GLA) from taking place.

Also, excess cholesterol, excess saturated fats, trans-fatty acids, and alcohol interfere with this enzyme. Fortunately, Gamma-Linolenic Acid (GLA) is available as a food supplement so that the problem of the blocked enzyme may be bypassed. The immature livers of newborns and infants also do not produce enough of the enzyme, but nature compensates for this by supplying Gamma-Linolenic Acid (GLA) with the mother's milk.

Besides the trans-fatty acids there are a number of other toxic elements contained in oils. Cotton seed oil contains a cyclopropene fatty acid which has toxic effects on the liver and gall bladder and also interferes with the functions of the essential fatty acids. Cotton seed oil has the highest content of pesticide residues. It also contains gossypol, which irritates the digestive tract, causes water retention in the lungs and shortness of breath.

Rape (Canola) and mustard seed oils contain erucic acid which causes fatty degeneration of heart, kidney, adrenals, and thyroid. Rape seed oils used to contain as much as 40% erucic acid, but geneticists

have bred new varieties which now contain less than 1% of erucic acid.

Herring and capelin oils contain between 10 and 20% cetoleic acid, which is similar in its effects to erucic acid.

It was mentioned earlier that labeling of fats and oils can be very deceptive. To truly inform consumers, the following information should be presented:

- Amounts of cis-LA (Linoleic Acid) and cis-LNA (Linolenic Acid) in grams per 100 grams of product.
- Amounts of trans-fatty acid isomers in grams per 100 grams of product.
- Maximum temperature reached during processing (should be below 50° C.)
- Whether light and air were excluded during processing.
- Date of pressing (or expiration date).
- Whether oil was mechanically pressed or chemically extracted.
- Whether oil was refined (degummed, bleached, deodorized).
- Whether oil was hydrogenated or partially hydrogenated.
- Whether seeds were organically grown.

Sugar is considered by most nutritionists to be the major dietary cause of degenerative diseases. While it does play a major role in degeneration, much of the effect is due to the fats into which the body converts excess sugar, and the fats produced therefrom then create major health problems for the body. Complex carbohydrates are digested and absorbed slowly, because they contain fiber and other materials which slow down digestion, and because the starches they contain are only slowly converted into sugars. For this reason, the energy they provide is burned up in body functions at the rate at which it is produced. They also contain the vitamin and mineral factors that allow the carbohydrates to "burn clean" into carbon dioxide and water.

Refined carbohydrates (e.g., white flour), on the other hand, are digested and absorbed much more rapidly and can overload the blood with glucose. Also, because they lack important minerals and vitamins, the body cannot burn them properly, and therefore has to deal with them another way, for instance by turning them into fat.

Sugars are absorbed even faster than refined carbohydrates, and are therefore much more dangerous. The body has to do something about the high glucose levels because when they go too high, a condition is created which may result in sugar shock, coma, or death. To prevent this, the body has to store the excess glucose. For millions of years this has been the way to prepare for famine in times of feasting. High blood glucose triggers the pancreas to secrete insulin, which stimulates the conversion of sugars into fatty acids which are then stored as triglycerides.

There are fatty acids of high quality and of low quality. The former heal, and the latter kill. Excess sugars and refined carbohydrates produce the kind that kill -- the sticky, saturated kind of fatty acid that increases the chance of stroke, heart attack and arteriosclerosis. But just as the wrong fats destroy health, so the right fats can be used to help restore health. This is being done by knowledgeable doctors all over the world. One of the pioneers in the therapeutic use of the essential unsaturated fatty acids is Johanna Budwig in Freudenstadt, Germany. She has had excellent results treating various degenerative diseases, including cancer, using dietary means that include daily consumption of a mixture of skim milk kwark and fresh, natural, unheated flax seed oil. Her diet also includes plenty of carrots, fresh greens, whole grains, rainbow trout, nuts and some herbs.

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