

Rationale For Nutritious Oils

Dr. R. L. Wysong

Essential Fatty Acids

Essential fatty acids are those fatty acids the body is incapable of synthesizing on its own in sufficient quantities to meet metabolic demands. In contrast with dietary fat used for fuel, cushioning of organs, and as a vehicle for absorption of fat-soluble nutrients, essential fatty acids play critical roles in cell and organelle membrane structure and a wide array of physiological processes through eicosanoid modulation.



E.F.A.™

A dietary supplement providing a wide range of unaltered essential fatty acids (including omega 3's, 6's and 9's) known to exert numerous beneficial structural and metabolic effects. Uniquely stabilized with Oxherphol™. Available with or without fish oil.

OIL INGREDIENTS: Cold Processed Flax Seed Oil, Pumpkin Seed Oil, Rice Bran Oil, High Oleic Safflower Oil, Fish Oil (or without), Evening Primrose Oil, and Borage Oil. Stabilized with Wysong Oxherphol™.

CAPSULE INGREDIENTS: Natural Phytonutrient Extracts and Concentrates of Flax Seed Oil, Evening Primrose Oil, Canola Oil, Black Currant Oil, and Pumpkin Seed Oil.

MARINE LIPIDS™

EPA & DHA omega 3 fatty acids from cold-water fish.

INGREDIENTS: Eicosapentaenoic Acid, Docosahexaenoic Acid.

FRESH SQUEEZED FLAX SEEDS™

High omega 3 flax seed oil with whole ground seeds.

INGREDIENTS: Organic Flax Seeds, Lecithin, Wysong Oxherphol™ antioxidant.

HERBED EXTRA VIRGIN OLIVE OIL™

A nutritious herbal olive oil used as a dressing/spread for bread, pastas, and salads. High in healthful omega 9 oils.

INGREDIENTS: Cold Pressed Extra Virgin Olive Oil, Rosemary, Fennel Seed, Peppercorns, Wysong Oxherphol™ antioxidant.



Cell and organelle membranes consist of a lipid bilayer (see Figure 1). This lipid bilayer is composed primarily of phospholipids which contain within their structure an assortment of fatty acids that is somewhat indicative of dietary fat intake. The more saturated the fatty acid content of the phospholipids, the more rigid these membranes tend to be and the lower their efficiency in terms of membrane biodynamic function.

Essential fatty acids, like linoleic and linolenic, are unsaturated fatty acids. These fatty acids are much more fluid by nature and thus contribute to transmembrane dynamics more effectively than do saturated fatty acids or the trans fatty acids that can occur in processed oils. Within the membrane, protein molecules contribute to forming "fluid" electron passageways for the flow of oxygen and fuel into and out of cells and organelles. (Unsaturated essential fatty acids contribute by forming pi (π) electron clouds with the sulfur groups associated with proteins in membrane structures.) Evidence observed in several species, including humans, suggests that pathology can result from long-term fatty acid malnutrition. If membrane structures are not sufficiently supplied with the proper fatty acids, they will not perform with maximum efficiency. This provides part of the rationale for the use of properly formulated and protected essential fatty acid formulas that can help swing the balance of fatty acid membrane structure to a more healthful state.

The Beneficial Eicosanoids

Essential fatty acids are also capable of being transformed into a variety of more complex, unsaturated fatty acids known as eicosanoids which play extremely important and active roles in the moment-by-moment

BILIPID CELL MEMBRANE

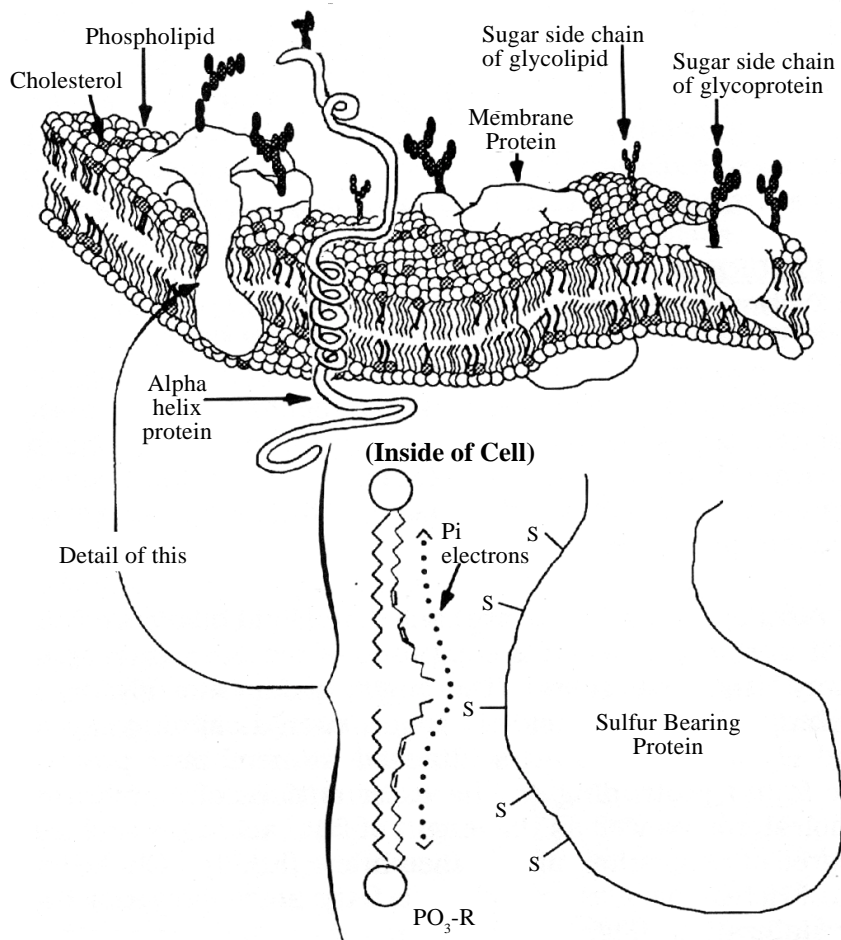


Figure 1: Phospholipids containing cis- essential fatty acids share pi electrons with proteins to effect energy transfer through biological membranes.

regulation of metabolic activities at the microcellular and tissue levels (see Figure 2). These regulatory eicosanoids parallel the actions of enzymes, on a biochemical level, and hormones, on an organ level. Compounds such as thromboxanes, prostaglandins, leukotrienes, and lipoxins comprise some of the important biochemical members of the eicosanoid family which are derived from essential fatty acids. Eicosanoids function both to turn on and turn off processes which activate certain metabolic events as well as to limit these metabolic events. Such timing of life

processes is one of the most unique characteristics of life and, in fact, is an important criterion for differentiating life from non-life.

Destruction/Protection of Essential Fatty Acids

Many natural foods contain essential fatty acids that are naturally protected and present in appropriate ratios for optimal nutrition. However, once a natural food product is, so to speak, cut from the vine, its inherent nutrient value immediately begins to decrease. Vitamins and minerals can be lost, proteins

and carbohydrates can degrade and isomerize, and fatty acids can slowly oxidize and diminish in nutritional value. Fatty acids in particular are especially susceptible to such degradation because they are highly reactive compounds prone to oxidation. The oxidation process is enhanced considerably in the presence of heat or light.

Within the natural plant product, fatty acids and oils are somewhat protected from oxidation due to built-in antioxidant systems present within the plant tissue. These naturally existing antioxidants include such components as vitamins E, C and A, various enzyme systems, certain mineral chelators, and the physical protection provided by the natural shell of the plant itself. But once these fatty acids and oils are removed from these factors and subsequently rendered unprotected, they become highly unstable and can quickly lose their nutritional value and even form compounds, such as free radical species, which can be toxic. Couple this with the fact that modern monoculture farming practices do not build nutrient value into crops but rather usually focus simply on crop yield, and with the extreme vitiating effects of modern food processing, it is not surprising the original nutritional profile can be greatly compromised.

Processing's Role

Thus, it is important that any food substance that contains essential fatty acids be minimally processed in a manner that helps protect these nutrients until they are consumed. One step in this

THE FUNCTIONS OF EICOSANOIDS

Organ System	Effects	Species Involved ^a	Organ System	Effects	Species Involved ^a
Prostanoids			Leukotrienes		
Blood vessels	Vasodilation Vasoconstriction	PGI ₂ > PGI ₃ > PGE ₁ TXA ₂	Bronchioles	Constriction	LTC ₄ , LTD ₄
Platelets	Adhesion Aggregation Antiaggregatory	TXA ₂	Ileum	Constriction	LTC ₄ , LTD ₄
Lung	Bronchiole constriction Bronchiole dilation	PGI ₂ > PGI ₃ > PGE PGF ₂ , TXA ₂ , PGD ₂ PGE ₂ , PGI ₂	Vascular	Constriction Permeability	LTC ₄ , LTD ₄ LTC ₄ , LTD ₄
Kidney	Glomerular filtration rate Renin secretion Natriuresis Diuresis	PGE ₂ , PGI ₂ , TXA ₂ PGL ₁ , PGF ₂ PGE ₂ , PGI ₂ PGE ₂	Pancreas	Insulin secretion	LTB ₄ , HETE
Stomach	Acid secretion	PGE ₂ , PGE ₁	Neutrophils	Adhesion Chemotaxis Chemokinesis Lysozyme secretion	LTB ₄ LTB ₄ , HETE
Small intestine	Peristalsis	PGE ₂ , PGF ₂	Monocytes	Chemotaxis Chemokinesis	LTB ₄ , HETE
Pancreas	Amylase secretion Insulin secretion	PGE ₂ , PGI ₂ PGE ₂	Basophils	Histamine secretion	LTB ₄ , HETE
Hypophysis	Secretion and growth Hormone adrenocorticotrophic	PGE ₂			
Tissue	Pain Cytoprotection	PGE ₂ PGI ₂ , dimethyl PGE			

^aPG = prostaglandin; PGI₂ = prostacyclin; TXA = thromboxane; LT = leukotriene; HETE = hydroxyeicosatetraenoic acid

Figure 2: Essential fatty acids are converted to eicosanoids, which have numerous vital metabolic functions.

direction is simply to use whole grain products since the nutrients that protect the fat while it is “on the vine” can also serve to protect the fatty acids in a food product. Additionally, supplemental, natural, antioxidant systems can be used to protect these fatty acids. Wysong Oxherphol™, which is a combination of specific vitamin E epimers and oleoresins from certain herbs, enzymes, and chelators, has been proven to have the capability of stabilizing fatty acids against oxidative degradation (see Oxherphol Technical Information, available at www.wysong.net).

When food products are vigorously processed as is common today, fatty acids can form compounds that actually interfere with the body’s ability to generate biochemicals that are complementary to health. Hydrogenation of oils changes essential fatty acids to simply calorie containing fats and also can inhibit enzyme systems that help change essential fatty acids into valuable eicosanoids. Heat,

light, and various other forces resulting from processing can dramatically isomerize and oxidize the fatty acids thus limiting their ability to exert their essential role in the body.

Thus, such diets fed over time can result in a variety of essential fatty acid deficiency manifestations including:

1. Loss of ability to maintain body temperature
2. Dry hair and skin
3. Impaired energy metabolism
4. Eczema
5. Gallstones
6. Vascular pathology
7. Immune dysfunction...and more.

(Added to this list are the previous functions of eicosanoids since these compounds are derived from essential fatty acids.)

Omega 6:Omega 3 Balance

Another consideration in essential fatty acid nutrition is the shift that has occurred in the balance of

essential fatty acids since the Industrial Age. With the scaling up to mass feeding and the use of easily cultivated southern latitude high-yield grains, linoleic acid (LA), an omega 6 fatty acid, has become predominate in the diet. In contrast, the consumption of linolenic acid (LNA), an omega 3 fatty acid, has been proportionately reduced. The resultant imbalance is significant since it is the eicosanoids generated from omega 3 fatty acids which are believed to be able to exert a variety of beneficial effects to cancel and balance potential pathological effects of excess omega 6 fatty acids.

For example, the eicosanoid thromboxane has the ability to cause platelet aggregation and clot formation whereas the eicosanoids produced by the omega 3 family fatty acids tend to reverse these effects by increasing clotting time and decreasing coagulation factors, including viscosity of blood. Thus if the omega 6 fatty acids predominate in the diet, the chance for vascular

FATTY ACID ENZYME COMPETITION

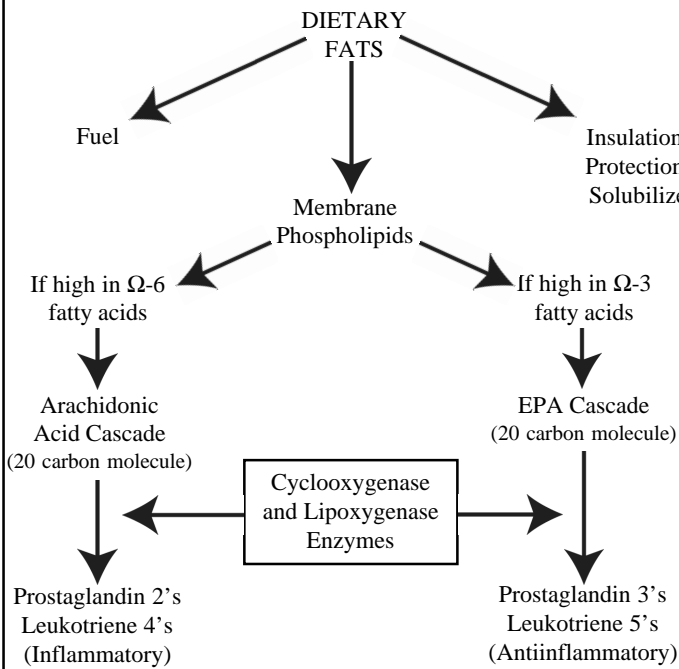


Figure 3: If the diet is high in omega 3 fatty acids, they will compete with arachidonic acid for enzymes, resulting in more antiinflammatory eicosanoids.

damage and circulatory difficulties increases compared to what would occur if sufficient omega 3 fatty acids were present in the diet. This is the basis for the present popular suggestion that fish oils, which are rich in omega 3 fatty acids, be included and increased in the human diet. The omega 3 fatty acids have the capability of competing for and using the same enzyme system that converts omega 6 fatty acids into eicosanoids and thus can shift the balance to a more favorable state. By increasing the ratio of omega 3 to omega 6, enzymes are competed for to produce more of the beneficial effects of the omega 3 eicosanoid family.

Similarly, a variety of inflammatory and allergic disorders can be related to improper fatty acid nutrition. The consumption of oxidized fats, as well as the imbalance

of omega 6 to omega 3 fatty acids, can result in a variety of cellular disorders. This can be linked to the overproduction of eicosanoids, which are inflammatory, and the underproduction of eicosanoids, which are antiinflammatory. The omega 3 fatty acids compete for enzyme systems which would normally convert omega 6 fatty acids into

proinflammatory products (see Figure 3). The common clinical finding of dry skin and other problems associated with E.F.A. (essential fatty acid) deficiency is explained by similar mechanisms. Eczema, pruritus, atopy, hyperkeratosis are controlled by biochemicals related to fatty acid intake. Prostanoids, leukotrienes and lipoxins that are proinflammatory can be increased or decreased depending upon the types of fatty acids consumed. Additionally, transepidermal water loss is affected by the makeup of a particular sphingolipid that exists between the granular and horny layer of the skin. If linoleic acid is not associated with this lipid layer in sufficient amounts, increased water will leak through the skin resulting in dryness and even increased water consumption (see Figure 4).

Omega 9 Fatty Acids

In addition to valuable omega 3's and 6's, Wysong oils also contain omega 9 fatty acids to round out the range of healthful dietary fatty acids provided by Wysong oils. Omega 9's are derived from various natural sources including gently processed extra-virgin olive oil and high oleic safflower. Extra-virgin olive oil results from the first pressing of olives and is the most flavorful of the olive oils. High oleic safflower oil is derived from a specially developed strain of plants whose seed are high in monounsaturated fatty acids. These mono-unsaturated oils have been shown to be not only highly nutritious, but remarkably stable at high temperatures which make them especially useful for cooking purposes.

More important to health, however, is the unfolding correlation between consumption of omega 9's and improved cardiovascular health. Numerous medical studies have provided evidence which demonstrates that intake of omega 9's can help lower serum cholesterol levels. Such significant findings further reinforce the importance of including a healthful balance of omega 3, 6, and 9 fatty acids in the diet.

Summary

The above is a very general description of the role of essential fatty acids in health. This is an extremely complex subject rapidly unfolding in the scientific literature.

When a thorough review of these matters is made, it becomes apparent that the underlying cause

of many health disturbances may be linked directly to the alteration of the natural diet. Therefore, by increasing natural factors in the diet, protecting them against degradation and imbalances, restoring quality and balance to the foods we consume, a more appropriate nutritional profile can occur. Minimal processing, the use of whole grains and natural antioxidants, also with the supplementation of cold-pressed essential fatty acid supplements that are properly stabilized and protected from heat, light, and air can serve to bring many health benefits. Improving fatty acid nutrition offers an excellent method of helping retard the degenerative diseases that can result from a lifetime of consuming improperly balanced fatty acids and toxic products that result from their manipulation and exposure to environmental forces.

Wysong E.F.A.TM, E.F.A. without Fish OilTM, Marine LipidsTM, Fresh Squeezed Flax SeedsTM, and Herbed Extra Virgin Olive OilTM provide supplementation of specific fatty acids including omega 3's, 6's, and 9's from fish oil, cold-pressed flax seed oil, high oleic safflower oil, rice bran oil, extra virgin olive oil, borage oil, evening primrose oil, canola oil, black currant oil, and pumpkin seed oil. Special processing is used to exclude oxygen and minimize nutrient damage. Wysong's natural antioxidant OxherpholTM helps deliver stabilized, active, natural, essential fatty acids to the diet. Additionally, Wysong ingredients are selected to achieve a balance of omega 3 fatty acids to omega 6 fatty acids to shift fatty acid metabolism toward the original diet and more natural form.

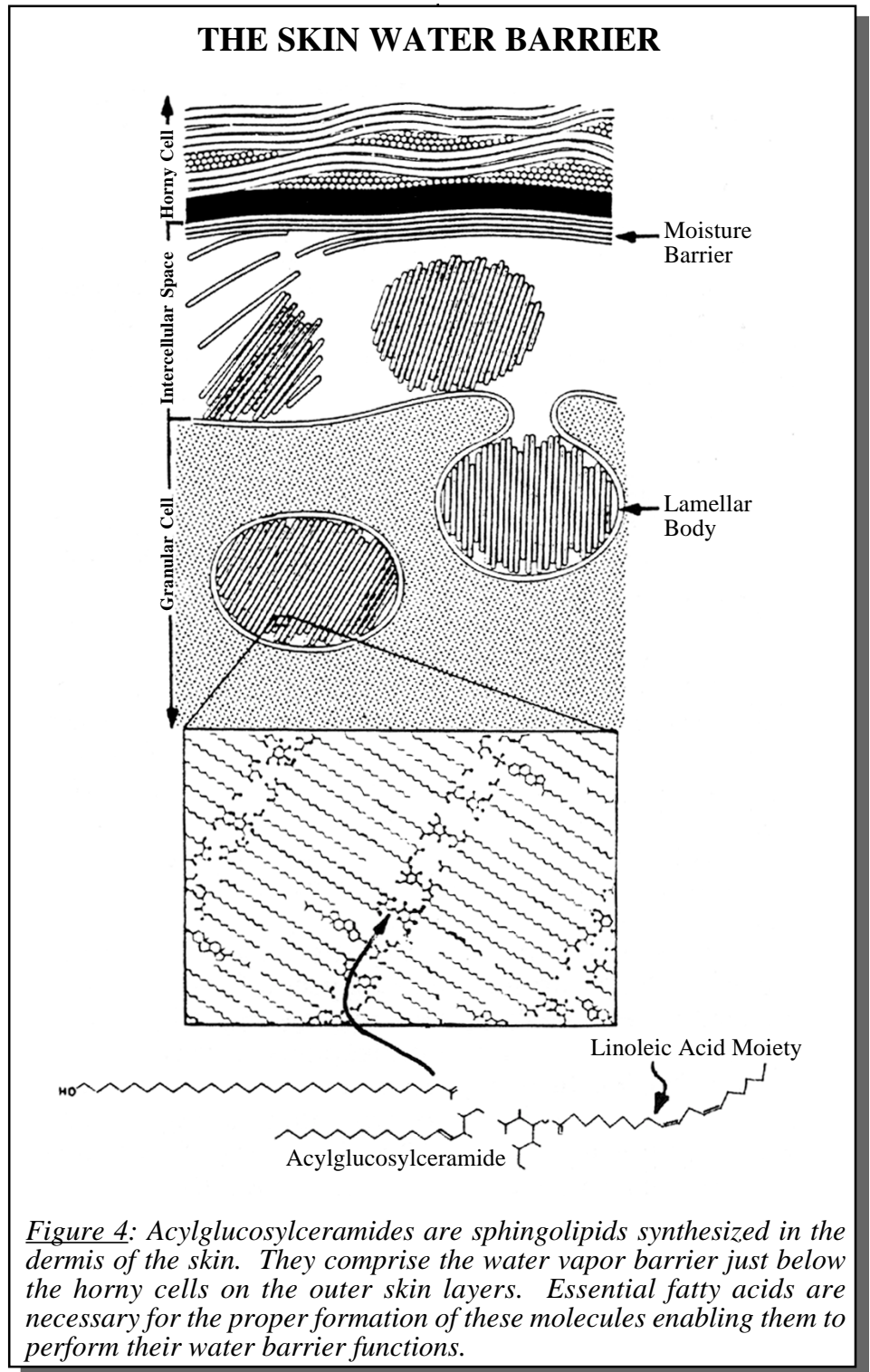


Figure 4: Acylglucosylceramides are sphingolipids synthesized in the dermis of the skin. They comprise the water vapor barrier just below the horny cells on the outer skin layers. Essential fatty acids are necessary for the proper formation of these molecules enabling them to perform their water barrier functions.

In summary, whole foods sources, careful processing, natural stabilization, and an increase in the omega 3 to omega 6 ratio are key to lipid nutrition. For a more thorough discussion of lipid nutrition, obtain the book Lipid Nutrition, by Dr. R.L. Wysong from Wysong Corporation (see page 8).

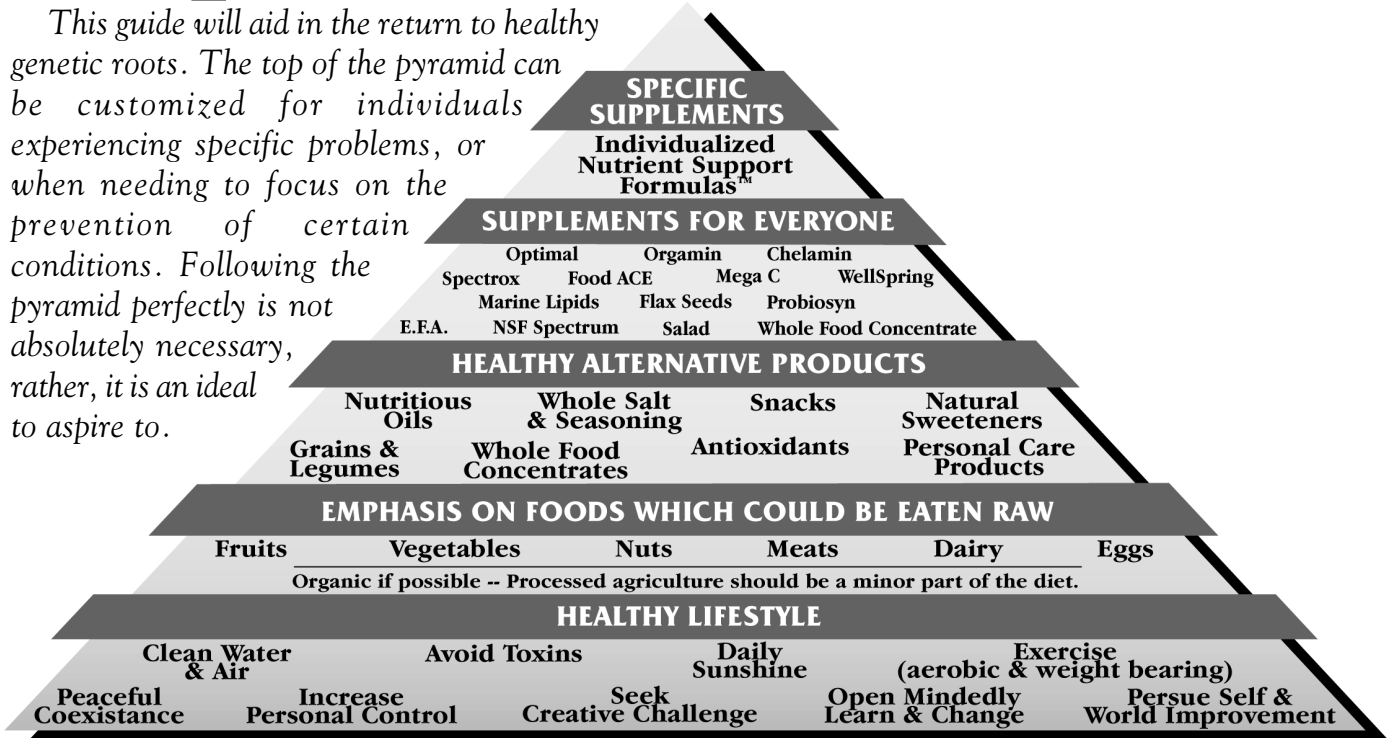
These statements have not been evaluated by the Food and Drug Administration. These products are not intended to diagnose, treat, cure, or prevent any disease.

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THE WYSONG OPTIMAL HEALTH PROGRAM

This guide will aid in the return to healthy genetic roots. The top of the pyramid can be customized for individuals experiencing specific problems, or when needing to focus on the prevention of certain conditions. Following the pyramid perfectly is not absolutely necessary, rather, it is an ideal to aspire to.



For Prevention and Health Optimization Follow These Steps:

- > Make physical activity and **EXERCISE** a part of everyday life. A combination of aerobic and weightbearing exercises is ideal.
- > Expose as much of the skin as possible to the **SUN** every day for at least 20 to 30 minutes.
- > Breathe fresh **AIR**. Change your residence and occupation if the air is toxic and do all that is possible to purify the indoor environment.
- > Use personal care and household products that are healthful, **NONTOXIC** and environmentally sensitive. Things put on the skin should be considered to be absorbed.
- > Drink fresh, clean **WATER**, or water that has been appropriately purified, life-enhanced with WellSpring™ water rejuvenator.
- > Get plenty of **SLEEP**. Take naps when your body tells you to.
- > Convert the **DIET** as much as possible to fresh, whole, raw foods that could be consumed exactly as they are found in nature. These foods include anything that does not have to be cooked or processed in some way in order for you to eat and digest it. This includes vegetables, fruits, nuts, eggs, dairy, and meats. If these foods are processed, it should be done minimally such as lightly steaming vegetables, cooking meats rare and soft boiling eggs. If at all possible, obtain foods from organic sources. Processed agricultural products should be a minor part of the diet and should be whole and organic if possible.
- > If **ILLNESS** strikes, seek natural solutions. Review the above recommendations to make sure that violation of these is not the cause. Nutritional supplements that have been designed with an understanding of the above principles, and with integrity to the value of the healing power of a natural context (such as is built into various Wysong supplements) should be used both as a preventive measure and as a first option when trouble strikes. Before submitting to dramatic medical intervention, seek a second opinion from a credible alternative physician. Do not expect immediate cures for ailments that have lingered for years or developed over decades. Be patient and confident that your informed approach is correct.
- > Remove **STRESS** caused by situations in which you feel hopeless or helpless. You must always arrange your life in such a way that you feel in control.
- > Seek **RELATIONSHIPS** that bring happiness, peace and a sense of self-worth. Additionally, we all need to touch people and we all need to be touched.
- > Find a career, a hobby or a sport that interests and **CHALLENGES** you. Do not be an automaton and simply live the will of others. Find something that taps your creative juices, makes interesting goals, and gives you a sense of excitement about the future.
- > Be always open to and seek **LEARNING**. Be inquisitive about broad areas as well as special interests. Be committed to truth – not preset dogmas. Be open-minded. Make self-improvement a work always in progress, and set lofty goals of leaving behind a better world.

EDUCATIONAL AIDS

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