

NEW / OLD FINDINGS ON UNIQUE E

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In the first large clinical study of its kind, medical investigators in Dallas, Texas proved and then published, on June 19, 1992, what informed wholistic/biological physicians have known since 1945. Then, the brothers Evan V. Shute, M.D., and Wilfred E. Shute, M.D., disseminated their findings that megadoses of vitamin E slow down (and in large enough single daily dosage even reverse) the development of atherosclerosis (1,2,3).

Using scientific method intervention study techniques, nutrition clinicians at the University of Texas (UT) Southwestern Medical Center gave volunteers daily doses of 800 international units (IU) of dl-alpha tocopheryl, commonly known as vitamin E. They discovered that the oxidation rate of low-density lipoprotein (LDL) was reduced by half. Ishwarlal Jialal, M.D., associated professor of internal medicine and clinical nutrition, and Scott Grundy, Ph.D., director of UT Southwestern's Center for Human Nutrition, published their findings in the June 1992 issue of the Journal of Lipid Research (4).

The Oxidation of LDL

Scientists believe it is the oxidation of low density lipoprotein that triggers the buildup of cholesterol in the artery wall, leading to atherosclerosis, or hardening of the arteries. Oxidation is the same process that causes oils to become rancid when exposed to air.

In the Jialal and Grundy placebo-controlled, double-blind intervention trial, two groups of twelve normal men were given either a placebo or vitamin E for twelve weeks. Levels of vitamin E in their blood and in their lipids were measured at the beginning of the study and then at six weeks and at twelve weeks. None of the volunteers experienced side effects, nor did their cholesterol levels change.

"While the mean blood levels of vitamin E were similar in both groups at the start of our investigations," said Dr. Jialal, the study's principal investigator, "levels for those receiving vitamin E were 3.3-fold higher at six weeks and 4.4-fold higher at twelve weeks compared to the placebo group."

Because vitamin E is a fat-soluble vitamin, the researchers also measured it in the LDL. They found vitamin E levels present that were similar to those in the blood.

"We can conclude from this finding that if you put someone on vitamin E, then measure it in the plasma and it's high, that means it's high in the LDL also," Dr. Jialal said.

Next the two investigators tried to oxidize the LDL in the laboratory and then clinically. "At baseline there was no difference in the oxidation of LDL," Dr. Jialal said. "But at six and twelve weeks, we showed that the vitamin E treated group was less prone to oxidation" At six weeks, the oxidation rate of LDL in the vitamin group was 55.7 percent less than in the placebo group. At twelve weeks the rate was 42 percent less.

"We've documented that vitamin E enrichment of LDL decreases its susceptibility to oxidation and may well interrupt a key step in atherogenesis (the formation of lipid deposits in the arteries)," Dr Jialal said. "Hence dietary micronutrients with anti-oxidant properties, such as vitamins E and C, could have a major role in future strategies for atherosclerosis prevention."

LDL transports 60 to 70 percent of the cholesterol in the blood. The higher the level of LDL, the greater the risk of coronary heart disease. Once LDL is inside the artery, it can be oxidized by cells that produce reactive oxygen.

"Oxidative modification of LDL is the most plausible explanation of how cholesterol promotes atherosclerosis," he added. "The earliest sign of atherosclerosis is the accumulation of cholesterol-filled white blood cells (monocytes or macrophages) in the lining of the artery wall."

Macrophages cannot take up normal LDL, but oxidize the LDL - resulting from exposure to free radicals - which binds itself to special receptors on the cells. These receptors take up oxidized LDL and its cholesterol in an unregulated manner and become engorged. Oxidized LDL is also toxic to cells, impairing their function and allowing more cholesterol-filled cells to enter the lining of the artery wall.

Drs. Jialal and Grundy have shown in previous test-tube studies that vitamins C and E inhibited the oxidation of LDL. "Thus, our studies suggest that by inhibiting LDL oxidation, the dietary anti-oxidants such as vitamin E could help prevent atherosclerosis," Dr. Jialal concluded.

It should be noted in passing that blood levels of vitamin E are not necessarily true indicators of how much of this nutrient is lodged in and utilized by the body. Vitamin E works at the cellular level. Higher blood levels may indicate that vitamin E is diminished at the cell level if it's being retained in the blood rather than released to the cells. This may explain why some diabetics with thickly sclerosed vessels, which prevent the release of vitamin E, often show higher vitamin E blood levels than normal.

The Vitamin E Family of Molecules

Like vitamin A from animal source foods (retinol) and from vegetable source foods (carotenoids), vitamin E is actually a family of eight molecules that collectively and individually have vitamin E activity. These molecules are called tocopherols and tocotrienols, with alpha tocopherol being the most potent physiologically. There are alpha, beta, gamma, delta tocopherols and alpha, beta, gamma, delta tocotrienols. The tocotrienols are thought to be the food precursors of the alpha and mixed vitamin E tocopherols just as beta carotene is the food precursor of carotenoid vitamin A. During the distillation process to separate vitamin E from wheat germ or food quality oils, the tocotrienols disappear quickly and probably become the tocopherols. Beta tocopherol has about 40 percent of the activity of alpha tocopherol, gamma tocopherol has about 8 percent of the activity, and alpha tocotrienol, when retained, has about 20 percent. Thus, these four molecules are the principal forms of vitamin E found in the diet.

Tocopherols, like retinol units, are sometimes expressed in terms of tocopherol equivalents or international units. For example:

1.48 IU or alpha tocopherol equivalent
= 1 mg d-alpha tocopherol
= 2 mg beta tocopherol
= 10 mg gamma tocopherol

1.36 IU or alpha tocopherol equivalent
= 1 mg d-alpha acetate

1.10 IU or alpha tocopherol equivalent
= 1 mg dl-alpha

1.00 IU or alpha tocopherol equivalent
= 1 mg dl-alpha acetate

This vitamin, as mentioned, is fat soluble and found throughout the body in fatty tissue, especially in cell membranes. Physiologically, the two principal roles of vitamin E are as an anti-oxidant and as a natural anti-thrombin agent in preventing clots inside the blood vessel. In cell membranes it inhibits the oxidation of polyunsaturated fatty acids that compose much of the cell membrane structure. Oxidation of poly-unsaturated fatty acids is associated with cellular damage, so vitamin E is thought to play a preventive role in many degenerative diseases, including cardiovascular disease and cancer, in particular (5).

The amount of vitamin E obtained from foods may vary due to its high sensitivity to cooking and processing loss. Although it is largely unaffected by boiling, high frying heat will oxidize it.

Exposure to light or air will degrade this vitamin, so storage must be monitored to avoid oxidation. Chlorine dioxide bleaching of flour destroys any vitamin E which has not been removed by milling. Similarly, the refining of vegetable oil removes much of its vitamin E content. Contact with copper and iron can also decrease the amount of vitamin E present in food. Mineral oil will reduce the absorption of vitamin E, while increased amounts of dietary polyunsaturated fatty acids can increase requirements for the vitamin.

Indeed, the United States recommended daily allowances (RDA) for vitamin E is directly related to body levels of polyunsaturated fatty acids (PUFA), and the published RDA values represent average supposedly adequate intakes in balanced U.S. diets. The adequacy of these intakes will vary if PUFA intake is large or small (6). The current Recommended Dietary Allowance (RDA) for vitamin E as set by the National Research Council of the National Academy of Science is ridiculously low at 5 to 10 milligrams (mg). That's 5 to 10 IU per day. It's not likely that human sub-clinical illness could be held off for any length of time at this bare survival vitamin E level.

What happens when experimental animals are deprived of alpha tocopherol for a few months or years? This question invariably has been answered to the satisfaction of investigating veterinarians and physiologists. Fully nine animal species tested, from rats to hamsters to cattle and monkeys, develop cardiac degeneration and eventually die from heart and blood vessel disease.

The History in Medicine of Alpha Tocopherol

In 1931, alpha tocopherol was introduced into human medicine by the Danish veterinarian, Philip Vogt-Moller, in the pages of the Lancet. He advocated its use for habitual abortion (7). Simultaneously and independently it occurred to two North American physicians, K. E. Mason and Evan Shute, that alpha tocopherol had vascular influences. Dr. Mason's work was performed on the decidual blood vessels of aborting rats, and Dr. Shute's on the blood vessels in leukoplakia of the rat vulva (8,9).

These fertility and reproduction studies lay dormant until the two Shute brothers and their colleagues produced a book about vitamin E and its use in cardiovascular disease (1). The Shutes went on to work with Dr. Floyd Skelton, research director of the Urban Maes Institute at New Orleans and Professor of Pathology at the University of Buffalo. The medical collaborators found that alpha tocopherol improved impaired capillary permeability and low platelet counts in experimental and clinical thrombocytopenic purpuras (10,11). One such patient was in severe heart failure. The alpha tocopherol used for his purpura soon had him out of bed and nearly well.

By 1974, the vitamin, as a therapeutic agent of cardiac and vascular disease and for the treatment of gynecological and obstetrical problems, was prescribed in megadoses for over 33,000 patients at The Shute Institute for Clinical and Laboratory Medicine, London, Ontario, Canada. By the time both Shute brothers had discontinued practicing, The Shute Institute had dispensed or prescribed the nutrient for more than 56,000 patients. Unfortunately, the Shute brothers discovered that the excellent results in the reversal of degenerative processes for patients that they had experienced in the beginning of their studies did not continue in the latter period of clinical practices. There was good reason for such therapeutic failure. You will see later in this article that an ineffectiveness of supplemental vitamin E relates to manufacturers even today producing an inferior product for human consumption. Comparing

its milligram dosages to any other nutrients, of all the available anti-oxidants, natural undiluted, un-esterified, high anti-oxidant, mixed tocopherol concentrate has the greatest free-radical quenching effect. And it brings even more therapeutic benefit to mankind.

Unique Physiological Properties of Vitamin E

The tocopherol complex (or family of molecules), alpha tocopherol, with its associated mixed tocopherols and tocotrienols, has certain unique properties which no other nutritional agent possesses. These properties form the basis of its value for the prevention and management of degenerative diseases of all types, but most especially in reducing and/or reversing cardiovascular dysfunction.

- It is a potent anti-oxidant and simultaneously improves the ability of the tissues into which it saturates to utilize oxygen (12,13,14).
- It influences clots to resolve, not only those already formed, but it also prevents both embolism and extension. It is a safe fibrinolytic agent and does not stimulate hemorrhage.
- It is a capillary vasodilator which opens up reserves of vascular networks to provide detours around vascular roadblocks. This was undeniably demonstrated in dogs and rabbits (15,16). The tocopherol complex mobilizes existing reserves of human and animal blood vessels to grow where they are required.
- It improves damaged capillary permeability (17).
- It resolves scars (18).
- It increases muscle power as illustrated in athletes, dogs, and horses (19).
- It preserves the walls of red blood cells, increases low platelet counts, and hastens epitheliation (20).

Ordinary mixed tocopherols not designated as "concentrated" are diluted with approximately one-third to one-half soy or other vegetable oil diluents which reduce anti-oxidant effects against free radical pathology. Concurrently, William J. Mauer, D.O., medical director of the Kingsley Medical Center in Arlington Heights, Illinois and current chairman of the American Board of Chelation Therapy, advises that he controls platelet aggregation for his patients with the use of natural, concentrated, mixed tocopherols. "Long before there was chelation therapy to counter cardiovascular problems, I effectively applied vitamin E to reverse cardiac dysfunction as recorded on the readouts of my patients' electrocardiograms," Dr. Mauer said in our interview.

In a journal article, Dr. Mauer quoted from a speech delivered by Dr. Evan Shute of the Shute Foundation to show how vitamin E acts in the body. Dr. Mauer wrote: "[Vitamin E is] the most valuable ally the cardiologist has yet found in the treatment of heart disease. It has no rivals. No other substance has this array of needful properties. This drug then becomes the first safe drug which can be given to patients suffering from the results of a clot in a coronary artery. There has been and still is no treatment at all for this type of case except two mildly useful drugs [heparin and dicumerol], which can be administered with great peril to the already precarious patient. Vitamin E replaces 'rest and reassurance,' which have no authentic basis, with real help to the damaged, laboring heart itself. It is the key both to the prevention and treatment of all those conditions in which a lack of blood supply due to thickened or blocked blood vessels or a lack of oxygen is a major part or the whole story of the disease. As I have said, it has no rivals. No pharmacologist or internist can suggest another substance with all the powers of this vitamin. God made it unique, and we ignore it at our peril." (21)

The Sources of Supplemental Vitamin E

Vitamin E generally occurs in the fats of vegetable foods. Natural vegetable oils are a particularly rich source of the vitamin, with soybean, corn, safflower, and wheat germ oil having the highest concentrations. Cottonseed oil contains vitamin E, as well, but it's not a vegetable oil. Smaller amounts

of vitamin E are found in whole grains, dark green leafy vegetables, nuts, and legumes. Animal foods, such as meat and dairy products, have some vitamin E, but usually are low in this nutrient.

As mentioned already, cooking and processing causes foods to lose their vitamin E since it is destroyed by heat, alkali, light, air, and freezing. The milling of grains, for example, causes them to lose about 80 percent of their vitamin E. Commercially processed vegetable oils are low in the vitamin. In fact, the by-products of processed oils are the most important sources for the production of vitamin E supplements used by humans and animals, especially for race horses to produce stamina. If a person depends partially on the ingestion of vegetable oils for vitamin E, he should choose cold-pressed or unrefined food quality oils. The concentration of vitamin E in vegetable oil is too low for total dependency as the sole source for adequate intake. Wheat germ oil, for instance, contains only 3 IU of vitamin E per tablespoonful (21).

The following foods, listed in the order of most voluminous occurrence of vitamin E, are offered for your evaluation. The international units per 100 grams of edible portion of food (100 grams = 3 1/2 ounces) are given (22):

216	Wheat germ oil
90	Sunflower seeds
88	Sunflower seed oil
72	Safflower oil
48	Almonds
45	Sesame oil
34	Peanut oil
29	Corn oil
22	Wheat germ
18	Peanuts
18	Olive oil
14	Soybean oil
13	Peanuts, roasted
11	Peanut butter
3.6	Butter
3.2	Spinach
3.0	Bran
2.9	Asparagus
2.5	Salmon
2.5	Brown rice
2.3	Rye, whole
2.2	Rye bread, dark
1.9	Pecans
1.9	Rye & wheat crackers
1.4	Whole wheat bread
1.0	Carrots
.99	Peas
.92	Walnut
.88	Bananas
.83	Eggs
.72	Tomatoes
.29	Lamb

As seen, vitamin E for supplement production is obtained from numerous plants but the soy bean is the most important source due to the availability of adequate raw material. Wheat is the next most important source, but this grain is more expensive and limited to only 20 percent of the available wheat supply.

Crude plant oils are prepared by having the seeds or grains treated with hot caustic soda to break up the pods and separate out the carbohydrates. A hexane bath extracts the crude oil which is then filtered under 50 pounds of pressure to remove insoluble materials. The hexane is evaporated and distilled for reuse. The crude oil that is left gets boiled and infused with nitrogen. Hydrochloric acid, methanol, and other chemicals may be added for deodorization and to produce a clear, odorless, and tasteless oil. Pure vitamin E capsules are red to dark brown in color.

Thus, vitamin E gets removed from vegetable oils leaving them clear and near colorless. This removal of vitamin E allows the vegetable oil to sustain a longer shelf life - a property that's desired by the oil manufacturer. In contrast, if the vitamin E was left in, such a vegetable oil would have to be used quickly while fresh or assuredly it will turn rancid, a true health hazard offering a high dose of pathology-forming free radicals.

It's noteworthy that without the aid of the biochemist, mankind would not have vitamin E capsules available. But if we had no biochemists, there would be no need to buy vitamin E capsules, as all the ingredients would have been left in our foods.

Supplement Manufacturers Alter Real Vitamin E

Currently retired and residing in Johnson City, Tennessee but still consulting on vitamin E with the Eastman Kodak Company, the most knowledgeable American on this subject is sixty-eight-year-old Ed Ostermeyer. He offered information about the six major manufacturers of vitamin E food supplements, worldwide. Half of them produce natural vitamin E, also known as *rectus, rectus, rectus* (RRR) d-alpha tocopherol and include the Henkel Corporation, a chemical company with headquarters in Dusseldorf, Germany which has a United States division, the Fine Chemicals Division of Minneapolis, Minnesota; Distillation Products Industries, a division of Eastman Kodak of Rochester, New York; and Eiasai, Ltd., a chemical company in Japan. The three producers/suppliers of the much less costly 8-isomer synthetic vitamin E are Hoffman LaRoche, Inc. of Nutley, New Jersey; Badische Anilene Soda Fabrican (BASF) of Ludwigshaffen, Germany; and the Rohone Poulenc Company of France.

In nutritional science, natural vitamin E goes by several names: its chemical name is 2, 5, 7, 8-Tetramethyl-2-(4', 8', 12'-trimethyl tridecyl)0-6 chromanol; its IUPAC name from the Commission on Biochemical Nomenclature is 2R, 4'R, 8'R-Alpha Tocopherol; its trivial name is RRR-Alpha Tocopherol; its common name is d-Alpha Tocopherol.

In 1922, two biochemists, H.M. Evans and K.S. Bishop, discovered the existence of vitamin E and tested it in the rat. "Vitamin E is absolutely essential for the rat in order to achieve reproduction," stated the researchers, and from then on the nutrient acquired the erroneous reputation of being the human "sex" or "fertility" vitamin and a sexual potency rejuvenator. This unfortunate label had quacks exploit the nutrient for unscientific purposes.

Another misfortune fell on vitamin E when Hoffman LaRoche, in 1937, discovered the means of synthesizing it. By 1941, the giant pharmaceutical company was synthesizing their product from lemon grass and phytol but then it switched its manufacturing process to making it from turpentine, acetone, and acetylin. Any relationship of this man-made vitamin E to all natural d-alpha tocopherol vitamin E was perhaps chemical but hardly biological. Hoffman LaRoche possessed great power in the marketing and scientific areas around the world, however, and was able to force through its dl-alpha tocopheryl acetate to establish it as the chemical industry standard. Thereafter, nearly all research was carried forward with synthetic vitamin E (with the later addition of esterified vitamin E from Eastman's competing Distillation Products Industries).

The Eastman Kodak Company employed Dr. Kenneth Hickman in 1928, and he eventually invented a high-vacuum distillation process that he named "a molecular still." At first the company employed molecular distillation for concentrating vitamin A out of fish liver oil. To capitalize on this important process, Eastman Kodak set up a new company division which it named Distillation Products Industries (DPI). From being in the camera and film business, Eastman Kodak suddenly found itself engaging in the nutritional supplementation industry, as well.

Subsequently, DPI discovered it could even more effectively distill vitamin E out of soybean oil. Such natural mixed tocopherols, in 1930 and for the next fifteen years, became available from DPI in quantity but without a market. It was then that the Shute brothers of London, Ontario, Canada announced their findings about the therapeutic benefits of vitamin E.

Even so, the market did not immediately open up for either Hoffman LaRoche or Eastman Kodak's DPI because a paper submitted by Dr. Evan Shute to the Journal of the American Medical Association was rejected. The journal's reason was that its editorial committee had had a 15-mg daily dosage of synthetic vitamin E tested for physiological effect and found it worthless.

The National Formulary and the United States Pharmacopeia, moreover, in 1949, incorrectly declared that the alpha-tocopherol portion was the only vitamin E factor that had any value. Such a pronouncement was costly for DPI; the company could then charge only for about 12 percent of its tocopherol production - merely for the alpha portion of a ton of vitamin E complex extraction. The financial bottom line was bringing the relatively new Eastman Kodak division an insufficient payoff.

d-Alpha Tocopheryl Acetate N.F. Fails as an Antioxidant

Distillation Products Industries put its molecule manipulators to work and in a DPI laboratory data sheet dated September 1, 1965 it came up with a single acid ester called d-alpha tocopheryl acetate NF. DPI broadcasted that this was a highly purified and stable form of vitamin E. It was competing well against Hoffman LaRoche's product by stating that the acetate form "is more active than synthetic dl-alpha tocopherol." [Author's note: back then the DPI copywriter made a mistake on the company's data sheet and should have referred to the synthetic form of vitamin E as "tocopheryl." Tocopherol is correctly used to designate the natural form of vitamin E. Tocopheryl identifies ESTERified tocopheryl or dl-synthetic forms of vitamin E.]

In this same DPI September 1, 1965 data sheet to customers, the company stated, "d-alpha tocopheryl acetate [or succinatel N.F. exhibits unusual [*Italics added by the author for emphasis*] resistance to destruction by oxidation even in the presence of minerals or at elevated temperatures. . . . Not being subject to oxidation, the tocopheryl esters do not serve as anti-oxidants as do the free tocopherols. Where anti-oxidant as well as vitamin E activity is desired, our distilled mixed tocopherols are suggested. "

An earlier DPI data sheet, dated June 1, 1965 stated, "Mixed Tocopherols Concentrate N.F. is a valuable vitamin E product because it provides biological activity and functions as an anti-oxidant. . . . In biological equivalencies the d-alpha tocopherol is more active than any of the other tocopherols (e.g. beta, gamma, delta) and is more active than synthetic dl-alpha tocopherol."

L. Borochoff, M.D. of Houston, Texas points out, "When present in nature, vitamin E is found only in the alcoholic form. It oxidizes readily. But when it is extracted in esterified form as an acetate, the vitamin E cannot be oxidized. To act as an anti-oxidant the vitamin supplement has to oxidize itself to prevent the oxidation of something else surrounding it. If it cannot oxidize, the vitamin E form is worthless as an anti-oxidant. In contrast, the primary benefit looked for in vitamin E is its anti-oxidant qualities." Thus, using DPI's own statement, the tocopheryls do not serve as anti-oxidants.

Their use of this non-oxidizing esterified vitamin E explains why the Shute brothers experienced poorer healing results for patients near the end of their practice lives than in the beginning. The Shute clinic was deceived by the statement that this new vitamin E form was more potent. Shifting from an unadulterated, all natural, mixed tocopherol, high anti-oxidant concentrate to an esterified vitamin E was the Shute patients' undoing. Once the beta, gamma, and delta factors in tocopherol are converted to the alpha tocopheryl form, there is no way that they can be retrieved by the body. And even if they were recoverable, why would anyone require the human body to do that extra job when the whole vitamin E complex is available in nature?

It could be that physicians in the modern era are still being duped, because DPI currently advertises that its product is "Natural-Source Vitamin E." The Eastman DPI misleading logo word is Source. The esterified product comes from a "natural source" all right, but it is not concentrated natural vitamin E that gets made from it. The nutritionally lacking Twinkies' commercial cupcake and grandma's home-baked, stone ground, whole wheat rolls have the same wheat "source," although there is a distinct nutritional difference between them. In the same way we have the relationship between Kodak's "natural source" alpha tocopheryl acetate (esterified) vitamin E and truly natural, non-esterified, high anti-oxidant d-alpha tocopherol vitamin E.

Alpha tocopheryl succinate is another of the Eastman Company esterified vitamin E products; only it is made from the processing of succinic acid instead of acetic acid. Alpha-tocopheryl maleate from maleic acid also is produced as an esterified vitamin E.

Another food factor is placed inside all oil concentrate capsules that are marketed as vitamin E supplements by the Eastman Company. The additional factor which takes up 33 percent to 50 percent of the individual capsule is a diluent consisting of food-grade vegetable oil. It's probable that such a vegetable oil has a tendency to gradually turn rancid from the moment of its production. Any exposure to the air begins its natural oxidation process.

Correct Dosage of Undiluted, Unesterified, Natural Vitamin E

The favorite theme for Dr. Evan Shute was a discussion of vitamin E, a nutrient that he took for himself and gave to his family. Here is a statement that he made in print about the natural, undiluted, un-esterified pure vitamin which he originally used. "A correct dose for a person is anything he can tolerate. I have my wife taking 3200 units a day. I take 2400 units myself ... A person of 70 years should take 1200 to 1600 or more units a day. Taking vitamin E is chronic treatment. You're on it for life, just as you're on bread for life. There is no reason for divided doses. We tell people to take all of their ration at breakfast in the morning. . . . Vitamin E is an unusual substance in that a half-dose will not give a half result. We give patients vitamin E to the top of the dam and nothing happens. We give additional vitamin E and what spills over the dam does the trick for them." (24)

The University of Alberta surgical group recommends the minimum use for arteriosclerotic legs of 1600 units of pure and natural vitamin E daily (25).

"It's not uncommon," according to Frank Graham, D.O., of Las Vegas, Nevada, "for me to put my needful patient on 2400 IU of vitamin E three times a day." He cited the case history of a 76-year-old man who was fated to die from severely involved cardiovascular disease within a couple of weeks, but who lived for seven happy months longer because of having received 7200 IU vitamin E daily in three divided doses, for this one case.

In the experience of clinician members of the American College of Advancement in Medicine, for males or females, at any age, the most effective dosage of all natural, mixed, non-esterified, undiluted tocopherol concentrate is a reddish-brown, 400-IU softgel (beef gelatin) capsule for each increment of 40 pounds of body weight. The therapeutic action of vitamin E takes place from the spill over portion. A 170-pound man should be taking five 400-IU capsules for a total of 2000 IU. That extra 300 IU of vitamin E been metabolized more than his body weight requires, is creating the actual therapeutic

effect. Vitamin E ingested much beyond 2400 IU is probably being wasted by being excreted from the body. Unlike the other fat soluble vitamins D and K, vitamin E is not stored in the body. Dr. Evan Shute had stated that all benefits cease within three to six days after discontinuing dosage.

The only known commercial proprietary source of the all natural high anti-oxidant, un-esterified undiluted, pure vitamin E concentrate just described is made available by the [A.C. Grace Company](#), 1100 Quitman Road, P.O. Box 570, Big Sandy, Texas 75755-9983; TEL: (903) 636-43680 FAX: (903) 636-4051.

Critique of the Vitamin E Intervention Trial at this Article's Beginning

A low plasma concentration of vitamin E is a more important risk factor than high cholesterol or high blood pressure for ischemic heart disease (IHD mortality, according to a study release by the World Health Organization Researchers led by K. Fred Gey, M.D., of the Institute of Biochemistry and Molecular Biology, Berne, Switzerland examined plasma levels of vitamins C, E, carotene, and other components plus blood pressure and smoking habit as possible contributors to IHD mortality in middle-aged men from sixteen European cities.

The researchers asserted that low levels of vitamin E in the blood were most predictive of IHD risk, even exceeding the predictive value of big cholesterol. Low vitamin E levels were found in 62 percent of men who died of IHD, and the combination of low vitamin E with high cholesterol, low vitamin and high blood pressure raised the predictive value to 87 percent. The researchers further stated that vitamin E protects against atherosclerosis by preventing oxidation of low-density lipoprotein cholesterol. The result is reduction in the deposition of cholesterol in the coronary arteries, they wrote in the January 1991 issue of the American Journal of Clinical Nutrition. Dr. Gey and colleagues called the findings "persuasive evidence" that anti-oxidants are significant protective factors against IHD (26).

Even against the background of this World Health Organization study of Dr. Gey and his colleagues, the human intervention trials conducted by Dr. Ishwarlal Jialal and Dr. Scott Grundy of The University of Texas Southwestern Medical Center and published in June 1992 in the Journal of Lipid Research are not definitive. I had introduced that trial as promoting the advantageous use of vitamin E, and they were advantageous as far as they went. These two doctors' studies, however, illustrate the general lack of knowledge about natural and concentrated mixed tocopherol vitamin E that characterizes most allopathic physicians and other health professionals, even those who do research in the area of nutritional medicine, such as Drs. Jialal and Grundy.

In fact, Dr. Fialal and Dr. Grundy were possibly mislead, not by Eastman's DPI but by Hoffman LaRoche who furnished the synthetic vitamin E product for their trial. Moreover, the paper they published indicates that even the inadequate metabolic activity of this furnished man made tocopheryl vitamin E was diluted with soybean oil just as the placebo was soybean oil.

Furthermore, the dosage, even though designated as a mega-quantity, was only about one half to two thirds the amount the study's volunteers should have been taking (unless they are very small men).

Still, Drs. Jialal and Grundy reported excellent metabolic results for their double-blinded volunteers. Just imagine how much more superior would have been the therapeutic benefits if the researchers had tested really pure, all natural, concentrated, mixed tocopherols, vitamin E capsules devoid of soybean oil diluent with their soybean placebo capsules and had even offered the most ideal dosage of 400 IU vitamin E for each 40 pounds of body weight. The results could have been a magnificent showing that vitamin E actually does slow or reverse the development of atherosclerosis. Perhaps the researchers will go back to the drawing board and do their study again. All of medicine and medical consumers would then benefit.

THE END

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