

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



The Great Anti-oxidant Vitamin E

Anthony di Fabio.
Copyright 1989

The Art of Getting Well is more than just a book, but also a technique for applying medical knowledge, called The Art of Practicing Medicine.

One big mistake with organized medicine is that those who rule it as a science assume that so much is now known about human tissues and organs that doctors can and do practice “science.”

When a field of knowledge has been reduced to a “science” in this sense, that field becomes “engineering” not “science”.

The practice of medicine is far, far from a field of engineering where, if x is done, then y is accomplished; i.e., all critical factors are known and under control.

So if “the art of getting well” is not a “science” and is not “engineering,” what is it?

Not long ago, I had diarrhea. I was advised by a kindly physician (Gus Prosch, Jr., M.D.) -- who practiced the art of medicine -- to take Psyllium Seed.

This sounded foolish to me, but nonetheless I went to our city’s only health food store and there found a big jar of Psyllium.

One to two tablespoons in about 10 ounces of water at night before bedtime and the diarrhea was totally under control.

Several months later a friend complained of inability to pass stools. When he also explained that he had lower bowels that were larger than normal, and that on taking an enema his body absorbed all the fluids, I immediately thought of Psyllium, and how it must work.

“Try this for a couple of days,” I said, pushing several ounces of Psyllium at him. No one had given me this idea, to use Psyllium also for constipation, but I knew it would work for this gentleman.

He did, and was amazed that it completely solved his problem. (I was a little amazed too!)

Later we pooled our resources and purchased twenty-five pounds, some of which later went to his sister.

Strange, isn’t it?

A single substance, cheap, known for centuries, easy and safe to use — and it solves both diarrhea and constipation!

No chocolate covered chemicals or mint flavors or expensive prescriptions. Just go to the store and buy a few ounces of Psyllium!

According to the third edition of *Herbally Yours*, Penny C. Royal (2560- North 560 East, Provo, Utah 84604) *Plantago psyllium* seeds “helps to lubricate and heal the intestinal tract. It also moistens and acts as a bulk agent.” It is good for colitis, colon, constipation, laxative (mild), hemorrhoids, and ulcers.

Psyllium has the property of absorbing vast quantities of water — probably for the purpose of storing water for the seeds’ renewal.

With constipation, Psyllium inside the bowels absorbs water, swelling up and permitting the villi to push the stools downward. With diarrhea, it causes the excess fluids to be absorbed.

I wonder if Hippocrates used Psyllium?

Now here’s where “the art of practicing medicine” comes in: I was on the phone with two doctors at different times during one day, and to each I mentioned this amazing substance, so simple, yet good for both constipation and diarrhea!

“Oh, I’ve known that for years!” they both answered.

I’ll wager that most holistic or preventive medicine physicians know about dual use for Psyllium; and I’ll further wager that it will not be taught in any medical school, except possibly Bastyr College in Washington, a school oriented toward “natural” solutions to physical problems. (Also see “Use of Dietary Fiber to Lower Cholesterol,” *AFP* James Nuovo, M.D., University of Washington School of Medicine, Seattle, Washington, April 1989). Probably most Natural Medicine schools will know and teach the use of Psyllium.

(Incidentally, if you have long lasting illnesses of either constipation or diarrhea, by all means check with a doctor. Roy Erickson warns that copious quantities of water should be taken with the Psyllium, and that for some folks who have flacid bowels, emulsified mineral oil might also be required. This to avoid possibility of drying out the stools.)

Medical research is mostly “science.” The clinical practice of medicine is mostly an “art.”

The application of medical knowledge is the practice of medicine, and therefore an art.

All scientific discoveries must go through a developmental stage. That’s why we have three phases stretching from knowledge to use: discovery (science), development (learning how to apply) and application (the art of).

Medical research somehow misses the normal tie-in with “development”, as most new scientific discoveries that are applied go through a “research and development” phase, and then on to applications.

Except for the fact that vested interests motivate what shall be researched (large pharmaceutical companies dictate the research dollars for the most part), the next biggest problem with medicine is the lack of a developmental phase or at least a very weakened one.

Great research can be accomplished in fine university centers, but if the knowledge is not developed or somehow related to what is already known, it becomes sterile knowledge of little or no use to mankind.

On the other hand, when doctors discover that something works for their patient, but they have no “scientific” basis for the declaration, they have already passed through the developmental to the applications phase — but without the research background.

Doctors who are genuinely interested in their patients will check and cross-check every piece of information that is used. If the application of “science” is proper, and can solve the health problems posed, or create a probability of correct diagnoses, such physicians will use it. If general knowledge — the kind that “everybody knows,” like Psyllium — will do the job, such physicians will draw on it.

Gus Prosch, Jr., M.D. told me that Colchicine — a substance used in gout, and also found in CoIBENEMID used for helping the liver to heal — when given in a one-shot intravenous injection, will help collagen tissue to form and grow. (See Michael Rask in the “Research” tab of <http://www.arthritis-trust.org>) He also stated that when the right amount of hydrochloric acid is given intravenously, the immunological system will be temporarily strengthened, and an illness, such as strept throat or colds can be improved drastically very shortly. (See the “Books” section of <http://www.arthritis-trust.org>.) I’ve personally witnessed this latter with

Medical data is for informational purposes only. You should always consult your family physician, or one of our referral physicians prior two of my children, who had taken every variety of antibiotics and could not get well, but within a day of the Hydrochloric Acid Intravenous (IV) injections they were on the recovery road.

None of these forms of treatment are scientifically derived, but rather represent the practice of the “Art of Medicine”, a pragmatic approach to helping folks.

If a treatment works, and works with a high percentage of success, it has already passed through the developmental and applications stages. Research applied to the treatment methodology thereafter is merely to discover the mechanics of why it works. While such after-the-fact research may lead to better health by better understanding of mechanisms, the research itself is no longer necessary for developing a successful treatment.

Medicine today has gotten itself oriented toward a complexity that is often too much a distorted view of the place of presumed “science” in the practice of medicine.

Establishmentarians shout that only the “scientific method” of double-blind studies, or their equivalent, published in “peer” reviewed journals) is suitable for establishing treatments. The illogical presumption by organizations that seek to maintain their power-base (or ignorance) is that anything that is “unproven by science” is “quackery.” By that reasoning, almost every medical advance in history has first been classified as quackery. Indeed, according to the *U.S. Office of Technology Assessment* publication (1978), “Assessing the Efficacy and Safety of Medical Technology,” **80-90% of all insurance-approved-medical-board-approved practices are unproven.**

Perhaps what is needed is a *Handbook of Applied Medicine — from Hippocrates to 2010 A.D.* This book could contain the sum-total of all the procedures and medicines that have worked for physicians.

In “Nutritional Aspects of Rheumatoid Arthritis,” “Articles” section of <http://www.arthritis-trust.org>) we mention that Vitamin E is a particularly good antioxidant, but that when it is esterified, it isn't. (Esterification is the process of converting an acid to an ester, which is any compound formed from an acid and an alcohol by removal of water.)

Gus Prosch, Jr., M.D. wrote to pharmaceutical companies to inquire about the antioxidant properties of their Vitamin E. I saw the letter from one company. They stated quite clearly that their Vitamin E had no antioxidant properties.

When Medical Research is performed using Vitamin E, it is highly improbable that the scientist will pick a store brand, but rather will get the best possible form of certifiably active Vitamin E.

The antioxidant properties of Vitamin E are clearly reported from good research and the fact is to be found in good published research papers. The fact that you are usually not able to buy the same kind of Vitamin E in the health food store that a research paper discusses is the great tragedy — but does illustrate the importance of “the art of practicing medicine.”

Currently there are inconsistent findings regarding the value of Vitamin E in the so-called scientific literature.

By questioning his sources of Vitamin E, Dr. Prosch discovered that he could not rely on standard brands when advising patients on nutrition for health. He found A.C. Grace Co. (1100 Quitman Rd., Big Sandy, TX 75755; 214-636-4368) and Roy Erickson, a man who has both a livelihood from unesterified Vitamin E and a mission to distribute it to those in need. (All sales by A.C. Grace are to health professionals and outlets).

Again I must disclaim: The *Rheumatoid Disease Foundation* has no vested interest in any company or product and does not stand to gain from recommendations from any business or physi-

cian. The A.C. Grace Company [1100 Quitman Road, PO Box 570, Big Sandy, TX 75755] has consistently packaged a Vitamin A product that has held benefit for patients. They specialize in Vitamin E complex called “Unique E®.”

One major factor producing inconsistent results in “scientific” studies regarding Vitamin E is the inconsistency in the type of Vitamin E used in the study.

With Roy Erickson's permission, I hereby provide his literature on unesterified Vitamin E:

“I would like to quote from a speech delivered by Dr. Evan Shute of the Shute Foundation of London, Ontario, Canada, to show how vitamin E acts in the body:

“The power of vitamin E to treat and prevent heart disease of all types, whether coronary or rheumatic, depends upon four chief characteristics:

“Vitamin E seems to be a natural anti-thrombin in the human blood stream. It has been found by Zierler of Johns Hopkins and the U.S. Navy Research Department and Kay at Tulane to be a substance normally circulating in the blood of all men which prevents clots occurring inside the vessel. It is the only substance preventing the clotting of blood which is not dangerous. It does not interfere with the normal clotting of blood in a wound and with the normal healing process. Indeed, it actually accelerates the healing of burns and wounds.

“The second important effect of the use of vitamin E is oxygen conservation. It is a natural antioxidant in the body. It has been shown by Houchin and Mattill, and this has been confirmed by many workers, to decrease the oxygen requirement of muscle by as much as 43 per cent and makes the narrow stream of blood which gets through the narrowed coronary artery in many heart patients adequate to prevent the occurrence of anoxia (lack of oxygen), which is the trigger that sets off anginal or heart pain. Consequently, we have patients in Montreal who were once unable to walk half a block without the occurrence of angina pectoris but are now able to climb Mount Royal. Indeed, there is present in my audience today at least one such patient.

“The third major function of vitamin E is the prevention of excessive scar tissue production and even, in some instances, the ability to melt away unwanted scar. It has been proven to function in this way in many areas of the body — from the hand, in Dupuytren's contraction (Rochester, N.Y.) — to urinary tract strictures (Johns Hopkins).

“It is a dilator of blood vessels. This was beautifully demonstrated by x-ray in rabbits injected before and after the administration of vitamin E by two workers in Florence, Italy. It opens up new pathways in the damaged circulation, therefore, and by-passes blocks produced by clots and hardened arteries.

“These four functions, all of them extensively confirmed in animal experimentation and human clinical work, make it 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, which can be administered with great peril to the already precarious patient. Vitamin E replaces ‘rest and assurance,’ 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 and properties of this

Medical data is for informational purposes only. You should always consult your family physician, or one of our referral physicians prior vitamin. God made it unique and we ignore it at our peril.”

In his “The Plain Facts About Vitamin E...” Roy Erickson says: “Since discovery in 1922 Vitamin E has attained such public recognition it is the most highly promoted and widely sold of all Vitamin supplements and is now available in a variety of vaguely labelled forms and price variation that all but the most well informed become confused as to which kind is best.

“Physicians using the holistic approach in applied nutrition and in preventive medicine are increasingly concerned with the difficulty their patients report in obtaining a reliably effective form from the wide variety of products on the market . . . and no wonder. The producers of these varied forms of Vitamin E present in their respective media to pharmaceutical firms, physicians and the public an erroneous concept that precludes a corrected evaluation of Vitamin E.

“These producers claim they are able to chemically convert the whole natural Vitamin E Complex, consisting of eight currently known factors termed alpha, beta, gamma, delta tocotrienols and alpha, beta, gamma, delta tocopherols derived by distillation from natural vegetable oils and known by the term Mixed Tocopherols, into a single acid ester (esterfied) form termed d-alpha tocopheryl acetate (or succinate, etc) and still retain biological activity provided by the synergistic working together of all eight naturally occurring factors. They term this chemically converted form “natural” vs synthetic because it originated from a natural source, i.e., vegetable oils as opposed to the synthetic dl-alpha tocopheryl acetate manufactured from chemicals.

“However in their laboratory DATA SHEETS providing specifications to the users of their various forms of Vitamin E they describe d-alpha tocopheryl acetate as exhibiting unusual resistance to destruction by oxidation even in presence of minerals or at elevated temperatures; and not being subject to oxidation the tocopheryl esters do NOT serve as antioxidants as do the natural free tocopherols. Where antioxidant activity as well as Vitamin E activity is desired they recommend use of their distilled UNesterfied Mixed Tocopherols. They also admit the d-stereoisomer of d-alpha tocopherol is more active than the racemic dl mixture (the synthetic form manufactured from chemicals). These chemically converted esterfied forms were produced and promoted prior to emergence of holistic physicians recognizing the benefits of antioxidant activity in anti cell-aging and neutralizing free radicals.”

“Unfortunately, most if not all research on Vitamin E has been conducted using either the esterfied or synthetic dl form of vitamin E under the erroneous assumption these forms were more stable and potent based on presence of higher blood levels of these two forms. However, vitamin E does not function at the blood but at the cell or tissue level. Higher blood levels may well indicate higher retention with less vitamin E released to the cell level where vitamin E functions. Because the stability factor of the esterfied and/or synthetic dl forms of vitamin E made it the choice of researchers there has been NO comparative use of an all natural UNesterfied HIGH antioxidant vitamin E with the esterfied and/or synthetic dl forms under controlled conditions using all three comparatively. [1989] Until this is done only holistic preventive physicians know the real difference on results too significant to deny.

“A.C.GRACE Vitamin E is unique in composition and in labelling integrity in being alone (insofar as search among the many Vitamin E products determines), in stating clearly the Vitamin E in our Capsules is NOT an esterfied tocopheryl acetate, succinate, dl synthetic nor ordinary Mixed Tocopherols. The ordinary Mixed Tocopherols vary in batch to batch in important alpha tocopherol potency and thus are not a reliable dosage form for this important factor as capsule potency is stated as I.U. of Vitamin E determined

by adding combined potency of all tocopherols in the mixture and avoid specific reference to actual I.U. of alpha tocopherol potency per capsule. A.C. GRACE E capsules are unique in labelling potency of its capsules specifically as I.U. of d-alpha tocopherol.

“Mixed Tocopherol Concentrate N.F. (N.F. = *National Formulary*) is the most effective form of Vitamin E in providing total biological activity PLUS full function as an antioxidant. This total effectiveness assures all four chief characteristics of the all natural UNesterfied. Vitamin E, the array of needful properties outlined in [the above speech (Dr. Shute)] by a physician who pioneered in natural and high potency dosage of this very essential nutrient.”

Roy Erickson adds that physicians may want to provide their patients direct from A.C. Grace. He has a computer entry for each patient so referred, and can automatically send the proper amount of Vitamin E to a designated patient, just before the patient is to run out.

He says further, that “It is clear that the esterfied d-alpha tocopheryl acetate, or synthetic dl forms of Vitamin E one finds on health food, discount, supermarket shelves or mail order vitamin catalogues is cheaper, not fully effective as an antioxidant and does few of the functions for which Vitamin E is to be taken. The most expensive vitamin E is that which does not prevent nor protect.

“Unesterfied Vitamin E, means all the natural mixed tocopherols have not been chemically processed or altered to the single acid ester d-alpha tocopheryl acetate (or succinate) esterfied forms that exhibit unusual resistance to destruction by oxidation even in the presence of minerals or at elevated temperatures. Not being subject to oxidation these tocopheryl esters do NOT serve as antioxidants providing anti-cell aging benefit and neutralizing the effects of harmful free radicals oxidizing.

“. . . The cheapest form [of Vitamin E] is the synthetic dl types manufactured from chemicals. Next higher priced is the esterfied d-alpha tocopheryl acetate. Higher in the industry price scale are natural Mixed Tocopherols with varying amounts of important alpha tocopherol with cost based on the percentage of this factor present.”

“Highest in cost are Concentrated Mixed Tocopherols. A.C. Grace Vitamin E is assayed for alpha tocopherol potency, then standardized and stabilized with potency of their beef gelatin, Softgel capsules certified by assay to provide 400 I.U. of the important alpha tocopherol factor along with high antioxidant potency for reliable uniform dosage assuring maximum preventive and protective Vitamin E function.

“Normally the darker the Vitamin E capsule content color the higher the antioxidant properties it will have but this color may vary from batch to batch. Light (almost water white) capsule content usually indicates the synthetic dl form of vitamin E. A light amber capsule content is the color of esterfied forms. Concentrated Mixed Tocopherols as with other natural substances can vary some in color from production batch to batch but the chemically altered and manufactured forms of vitamin E maintain a continuous uniformity of capsule content color of no value insofar as product effectiveness.”

Besides general health, what does all this have to do with Arthritis?

According to *Today's Living*, January 1980, “Vitamin E is often used by physicians to treat leg cramps, “restless legs,” intermittent claudication, which is a disorder causing great pain in legs and feet, and other disorders. . . . two Israeli doctors report[ed] very good results in using this vitamin for their osteoarthritic patients.”

[Claudication can usually be attributed to lack of calcium or oxygen in arthritis, but obviously, if the circulatory system is clogged, and blood is scarce, then oxygen will be scarce. If Vita-

Medical data is for informational purposes only. You should always consult your family physician, or one of our referral physicians prior min E helps when the circulation is clogged, it will ease claudication. Ed.]

In *Today's Living*, their article "Vitamin E Helps Arthritic Patients" describes a double-blind study, where neither the physician or the patient knows which is receiving the medicine and which the placebo, a pill that has no effect.

Much to the surprise of Drs. I. Machtey and L. Ouaknine of the Rheumatology Clinic at the Hasharon Hospital, one-fourth of those taking the placebo — Vitamin E — showed actual improvement.

Later they decided to do a test on use of Vitamin E in osteoarthritis, and there discovered that it was good for leg cramps.

There is now adequate evidence that Vitamin E protects against heart attack and stroke. But it is also important to understand two things: (1) The form of Vitamin E must be correct, (2) Vitamin E must be taken in the correct quantities to supply that protection. One-half dose will not provide one-half protection. It is an all or none substance and it is **not** stored in the body very long so all protective benefits cease within 3 to 6 days right after you discontinue regular daily dosage.

Many physicians who use the A.C. Grace product, Roy Erickson says, report that less than 4 capsules (1600 I.U.) is an inadequate dosage for most cases and the only danger lies in using too little. This statement is supported by the *Prevention Magazine* article "Vitamin E for Ailing and Healthy Hearts," by Wilfred E. Shute, M.D. and Harald J. Taub, December 1969. Also see their "How Vitamin E Protects Against Heart Attack and Stroke," October 1976; "Vitamin E Helps Protect the Breasts," April 1977; "Vitamin E — The Better Treatment for Angina," December 1972; "Vitamin E, The Other Half of Diabetes Control," January 1973.

A later study published in the *American Journal of Epidemiology*, "Serum Vitamin E and Risk of Cancer Among Finnish Men During a 10-year Follow-Up," Vol. 127, No. 1, 1988, demonstrates that high vitamin E intake protects against cancer.

I would like to close with an article written by one of our referral physicians, Harold E. Buttram, M.D. of Quakertown, PA. It was published in *Health Report*, Volume 7, Number 10, October 1987 (Clymer Health Clinic, R.D. 3, Quakertown, PA 18951-3212), "Guidelines for the Use of Vitamin E":

"With myocardial infarctions a leading cause of death in the United States today, it is difficult to realize that heart attacks were virtually unknown in the early 1900s.

"Paul Dudley White, M.D., one of the two original cardiologists in this country and later physician for President Eisenhower, stated that he had never heard of a heart attack (coronary thrombosis) when he graduated from medical school in 1911. Even in the 1930s, heart attacks were 'an old man's disease.'

"As Wilfrid E. Shute, M.D. wrote in the *Complete Vitamin E Book* (New Canaan, CT: Keats Publishing Co., 1975), 'It is obvious that the cause of coronary thrombosis, a condition which is unique to the last 60 years or so, must be connected in some way with the clotting mechanism in the blood stream...'

"Today we know that the natural antithrombin (anti-clotting factor) in the bloodstream is a chemical called alpha tocopherol (vitamin E).'

"Contained in Wheat Germ

"At the turn of the century the average dietary intake of vitamin E was 800 to 1,000 units per day, mostly from whole grain breads. However, around 1912 a milling process came into general use that removed the wheat germ and hull and leaving only white flour. With removal of the germ seed most minerals and vitamins were also removed, including vitamin E. Bleaching of the flour, introduced later, removed any trace of Vitamin E that was left. Vi-

min E has also since been removed from vegetable oils by distillation and hydrogenation.

"As a result, daily intakes of vitamin E have dropped to as low as seven units. The Food and Drug Administration has set a mere 15 units as recommended daily dietary allowance.

"Many leading nutritionists today believe that this drastic reduction in vitamin E intake is a major cause of today's high incidence of coronary heart disease.

"Properties of Vitamin E

"Antithrombin Activity. Vitamin E's potential value as an anticlotting agent is seldom recognized today. This subject was reviewed by William Mauer, M.D., in a presentation before the American Academy of Medical Preventives [now the American College for Advancement of Medicine, ACAM: Ed] in November 1986 in Anaheim, CA. He reviewed his own 25 years of clinical experience with vitamin E in treatment of blood clots and vascular disease.

"According to Dr. Mauer, most of the significant work on vitamin E was done by the Dr. Shute brothers, who provided guidelines for his own work through the years.

"Dr. Mauer routinely has placed cardiac patients on a special form of concentrated mixed tocopherols in dosage range of 1,600 to 2,400 units a day. At this dosage level, he has observed dissolution of coronary scars, reversal of electrocardiographic abnormalities, and dissolving of blood clots.

"Antioxidant Activity. Vitamin E's second important function is to reduce the need for oxygen in body tissues. Vitamin C, selenium, and other nutrients share this function.

"When arteries are narrowed, the availability of oxygen is gradually decreased until it reaches the level at which cells can no longer carry out their normal metabolic functions. If the process continues, cells can no longer survive.

"Whatever the cause, vitamin E's ability to decrease the cells' need for oxygen may help to preserve tissues and prevent gangrene, cerebral softening, or myocardial infarction.

"Other Benefits. Other actions of vitamin E include improvement of abnormal capillary permeability, capillary vasodilation, improved collateral circulation, improved wound healing, and protection of the lungs from air pollution.

"Importance of Mixed Tocopherols. In natural vitamin E there are eight currently known factors, four tocotrienols and four tocopherols which have been labelled by the Greek letters alpha, beta, gamma, delta. Until the 1960's 45 to 50% of all commercially extracted vitamin E contained from 12 to 20% of alpha tocopherol with the balance in the other tocopherols.

"Because USP [*United States Pharmacopeia*] and NF [*National Formulary*] erroneously recognized only the d alpha as an active factor, producers of Vitamin E could charge only for the percent of that factor in their product so they devised the method of converting all the other tocopherols present into a single acid ester termed d-alpha tocopheryl acetate. With the entire batch now identified as a form of alpha they could then charge for the entire content of their production with a very significant increase in profits.

"This was unfortunate because, according to Dr. Mauer, the esterified (synthetic) vitamin E had only about 20 percent of antithrombin activity and little or none of antioxidant properties found in the natural mixed tocopherols. The d-alpha tocopherol carries mainly anti-thrombotic activity, but the other tocopherols act primarily as antioxidants.

"Again, as reviewed by Dr. Mauer, many commercial brands of vitamin E today either consist entirely of synthetic d alpha tocopheryl or of varying mixtures of the synthetic product with natural mixed tocopherols. The brand favored by Dr. Mauer over 26 years is put out by A.C. Grace Company with the brand name

Medical data is for informational purposes only. You should always consult your family physician, or one of our referral physicians prior to activity and functions as an antioxidant.

GRACE E. It is entirely natural, UNesterified and highest in antioxidant potency and, he believes, far more effective than products consisting entirely or in part of the esterified forms of vitamin E.

“Dosages of Vitamin E.

“Vitamin E should be used cautiously in young children and in dosages of no more than 50 or 75 units per day. Some nutritionists have warned that larger doses may lead to early sexual maturation.

“Dosages of 400 to 800 units are generally advised for routine use in adults. As therapy for thrombophlebitis, coronary heart disease, or other forms of vascular disease, the Drs. Shute brothers and Dr. Mauer found dosages of 1600 - 2400 units per day as most effective. Smaller doses may not be effective; larger doses are wasted.

“Precautions

“Vitamin E is nontoxic. Doses up to 55,000 I.U. of natural mixed tocopherols have been given daily for five months and administered doses up to 3000 I.U. daily for up to 11 years with no side effects. In contrast to other fat soluble vitamins it is not stored in the body more than a few days. But there should be some precautions in its use.

“Vitamin E does have a tonic action on the heart. For this reason, there may be a temporary rise in blood pressure in hypertensive patients. If continued, the blood pressure usually drops again.

“Hypertensive patients should begin with smaller doses, as low as 100 units in severe cases, slowly increasing over weeks or months while blood pressures are monitored. The same precaution should be taken by patients with rheumatic heart disease.

“Another possible side effect is mild nausea. If this appears, the dose should be reduced until the symptom disappears.

“One other precaution: Do not mix vitamin E with iron supplements in the stomach, as iron deactivates the vitamin E

“Vitamin E Ointment

“Home-made vitamin E ointment may be prepared by mixing the contents of about eight to ten vitamin E capsules into a small jar of Pacquin’s Dry Skin Creme. Dr. Shute, in his book, described its use on first and second degree burns. It would not be advised for deeper burns because of danger of infection.

“Dr. Shute also used it to enhance healing of decubitus ulcers, to reduce acne scars, and to relieve pain from sciatica and neuralgias. However, because a small number of users have allergic reactions, the ointment should be tested first on a small area of the skin before treating larger areas.”

The moral seems to be that, “Yes. Vitamin E is great, but be careful what you use. Not all that is labeled Vitamin E is either exactly Vitamin E you expect, or great!”

A closing thought from Roy Erickson:

“ANY Vitamin E is better than NO Vitamin E.

“From the year 1900 — at which time there were NO reported cases of coronary thrombosis — to the early 70’s coronary thrombosis became the Number 1 killer with an ever increasing number of adults.

“Now estimated at 50 to 60 million using some form of this unique nutrient in the mid 70’s to date, heart attacks have dropped off 35% with no other significant change in life styles.

“Any connection?”

Data Sheet from the Laboratories of Distillation Products Industries

Division of Eastman Kodak Company, Rochester, NY,
June 1, 1965

Mixed Tocopherols Concentrate N.F. [The National Formulary] is a valuable vitamin E product because it provides biological

Description:

Mixed Tocopherols Concentrate N.F. is a brownish-red oil with a mild taste and odor. The primary constituents are d-alpha and d-gamma tocopherols while small amounts of d-beta and d-delta tocopherols are also present. Of the total tocopherols present, at least 50% is d-alpha tocopherol. This product conforms with the monograph for “Mixed Tocopherols Concentrate” in The National Formulary [NF]. It is available at two levels of tocopherol content:

	mg./gram	mg./gram	International Units
Type	<u>Mixed Tocopherols</u>	<u>d-alpha tocopherol</u>	<u>Vitamin E/Gram</u>
4-34	340	170	253
4-50	500	250	372

Since the unesterified tocopherols are effective antioxidants, they are subject to oxidation, especially in the presence of minerals. For use in tablets or other products where exposure to air and minerals makes oxidation a problem, we suggest Dry Mixed Tocopherols concentrate as a source of unesterified d-Alpha Tocopherol or tocopheryl ester. For such uses DPI [Distillation Products Industries] offers the following esters: d-Alpha Tocopheryl Acetate N.F. (liquid or dry) and d-Alpha tocopheryl Acid Succinate N.F. These products are described in separate data sheets.

Source:

Domestic vegetable oil products are distilled and processed to concentrate the natural tocopherols and increase the proportion of d-alpha tocopherol.

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. According to The National Formulary, 1 milligram of d-alpha tocopherol = 1.49 International Units (I.U.) of vitamin E.

Mixed Tocopherols Concentrate N.F. is a valuable vitamin E product because it provides biological activity and functions as an antioxidant.

Important Notice: (September 1, 1965)

d-Alpha Tocopheryl Acetate N.F. --

- has the highest biological potency of any commercial form of vitamin E.

- exhibits the high stability typical of the esters of tocopheryl.

- is unrivalled as a source of vitamin E for high potency capsules or solubilized preparations.

- meets the standards of the Food Chemicals Codex of the National Research Council.

Description:

d-Alpha Tocopheryl Acetate N.F. is a highly purified form of vitamin E, the final step being crystallization. Since this ester melts about 25° C., it usually is seen as a light yellow, viscous oil with mild taste and odor.

d-Alpha Tocopheryl Acetate N.F. exhibits unusual resistance to destruction by oxidation even in the presence of minerals or at elevated temperatures; thus it is an effective source of vitamin E for a wide variety of uses ranging from high potency vitamin-mineral tablets to canned dietary supplements. Not being subject to oxidation, the tocopheryl esters [acetate or succinate] do not serve as antioxidants as to the [natural] free tocopherols. Where antioxidant as well as vitamin E activity is desired, our distilled mixed tocopherols are suggested.

d-Alpha Tocopheryl Acetate N.F. is a pure, stable ester of d-alpha tocopherol, the form that occurs in nature. Alpha tocopherol is more active biologically than the other tocopherol homologs, and the d-stereoisomer of alpha tocopherol is more active than the racemic dl mixture [synthetically manufactured mixture].

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

Biological Equivalency:

d-Alpha Tocopheryl Acetate Concentrate N.F. is standardized and labeled on the basis of its content of d-Alpha Tocopheryl Acetate. It also contains small quantities of acetates of beta, gamma and delta tocopherols for which no potency claim is made. The tocopheryl acetates are stable against oxidation and therefore are ineffective as antioxidants. For products in which a protective antioxidant action is desirable in addition to vitamin E activity, [DPI (Distillation Products Industries)] offer Mixed Tocopherols Concentrate.

Another company which has consistently packaged a good grade of Vitamin E -- that is, a line of products containing Vitamin E -- is that of J.R. Carlson Laboratories, Inc. [15 College Drive, Arlington Heights, IL 60004].

They've tried to answer most questions that we might have regarding Vitamin E, as follows:

WHAT IS VITAMIN E?

Vitamin E is a fat-soluble nutrient which is essential to life. Since the human body cannot make its own Vitamin E, it must be obtained from food or nutritional supplements. It is naturally present in portions of the blood, fatty tissues, cell membranes, muscle, liver, heart and genital organs.

ALPHA tocopherol (or ALPHA tocopheryl) is recognized by authorities as the most significantly active form of Vitamin E. According to Dr. Evan V. Shute in his book, THE HEART AND VITAMIN E, "... we equate Vitamin E to alpha tocopherol, since Vitamin E is merely a kind of medical shorthand or slang for the alpha substance."

WHY SHOULD I TAKE VITAMIN E SUPPLEMENTS?

The Food and Nutrition Board of the National Academy of Sciences/Nutritional Research Council states that Vitamin E is essential for health. This statement is based on clinical studies showing that a deficiency of Vitamin E in the diet produces many adverse physiological conditions. Therefore, an adequate daily intake of Vitamin E is of the utmost importance.

Unfortunately, today's trend towards the consumption of highly processed and refined foods is reducing the availability of Vitamin E in food. Even the handling, storage and processing of many fresh foods expose the nutrient to destructive influences, thereby, lowering the amount of Vitamin E present in the food.

HOW MUCH VITAMIN E SHOULD I TAKE?

This is a difficult question to answer. Although Vitamin E is recognized as being necessary in human nutrition, the dosages recommended by experts differ.

The U. S. Recommended Daily Allowances is 5 I.U. for infants, 10 I.U. for children (1-4) and 30 I.U. for adults and children over four years of age. These dosage levels are indicated to prevent symptoms of Vitamin E deficiency.

Many experts in the field of nutrition, however, believe that the prevention of Vitamin E deficiency symptoms is not enough. Dr. Evan V. Shute, a Canadian physician internationally recognized for his 30 years of work with Vitamin E stated, "We think that the average, normal female should have about 400 Units a day and the average, normal male about 600 Units a day."

In a recent national survey of vitamin usage in the United States, 400 I.U. was clearly the most popular Vitamin E dosage per day.

WHEN SHOULD I TAKE MY VITAMIN E?

Most vitamins should be taken with meals, when food is being digested. This may increase the body's utilization of the nutritional supplement and prevent any possible feelings of indigestion.

If a large dose of Vitamin E is taken daily; it is generally preferable to take it in divided doses with meals, as with breakfast,

CAN I TAKE TOO MUCH VITAMIN E?

An overwhelming majority of researchers in the field of nutrition have reported no evidence of Vitamin E toxicity in their research participants who were taking Vitamin E including those who have taken high, prolonged doses.

In a U.S. Government controlled study, 28 men received 100 to 800 I.U. of Vitamin E per day over three years with no evidence of toxicity.

The Food and Nutrition Board advises that caution is indicated when large doses of Vitamin E over long periods of time are contemplated, but does not indicate what they consider a large dose nor what they consider a long period of time. They also state that "Vitamin E is relatively non-toxic."

WHY IS NATURAL VITAMIN E BETTER THAN SYNTHETIC VITAMIN E?

Natural Vitamin E's biological activity (effectiveness) is much greater than the Synthetic form. Recent human studies [1991] conducted by Max Horwitt, Ph.D., Professor Emeritus, Biochemistry, at the St. Louis School of Medicine, concluded that Natural Vitamin E has at least twice the biological activity of the Synthetic form. He also found that ALL forms of Natural Vitamin E were absorbed nearly two times better and retained in the body significantly longer than Synthetic Vitamin E.

Moreover, Dr. Graham Burton, associated with the National Research Council of Canada, recently discovered that Natural Vitamin E tissue levels were much higher than Synthetic Vitamin E. He found 5.3 times more Natural Vitamin E in the brain than Synthetic Vitamin E, 3.6 times more in red blood cells, 2.6 times more in the lungs, 2.4 times more in plasma, 1.9 times more in the heart, and 1.7 times more in muscles.

Your body knows the difference between Natural and Synthetic Vitamin E!

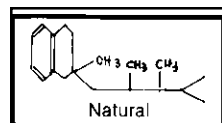
WHAT IS THE DIFFERENCE BETWEEN NATURAL AND SYNTHETIC VITAMIN E?

There are several differences:

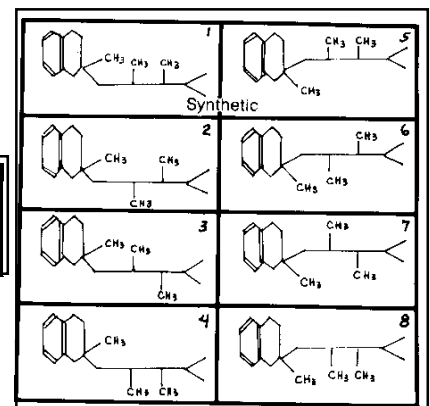
1. SOURCE: The first and most important difference between Natural and Synthetic Vitamin E is the source. Natural Vitamin E is derived from vegetable oils. Synthetic Vitamin E is produced from turpentine or petroleum products. Carlson Vitamin E is derived from soybean oil.

2. BIOLOGICAL ACTIVITY: The biological activities (effectiveness) of Natural and Synthetic Vitamin E are not equivalent. Natural Vitamin E has much greater biological activity than Synthetic Vitamin E.

3. ABSORPTION and RETENTION: Natural Vitamin E is absorbed better than



Synthetic Vitamin E and is retained in the body longer.



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

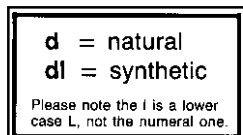
4. MOLECULAR CONFIGURATION: Another difference related to the source of the Vitamin E is its molecular configuration. Natural Vitamin E is a single molecular configuration. Synthetic Vitamin E is a mixture of eight molecular configurations, seven of which only exist when made by man. Clearly, Synthetic Vitamin E is not molecularly equivalent to Natural Vitamin E.

Dr. Jeffrey Bland, Ph.D., has stated that some of the seven molecular configurations of Synthetic Vitamin E (numbered 2 through 8 above) may inhibit the active molecular configuration (number 1) from entering cellular membranes in the human body.

CAN I DETERMINE FROM THE LABEL WHETHER A PRODUCT CONTAINS NATURAL OR SYNTHETIC E?

When Vitamin E is found in nature, it occurs in the **d** molecular form only. Hence, the label of a Natural Vitamin E product should always read d-alpha tocopherol.

When Vitamin E is synthesized, it occurs in the **dl** molecular form. Hence, the label of a Synthetic Vitamin E product should read dl-alpha tocopherol.



Examples of Natural Vitamin E:

d-alpha tocopherol; d-alpha tocopheryl acetate; d-alpha tocopheryl succinate

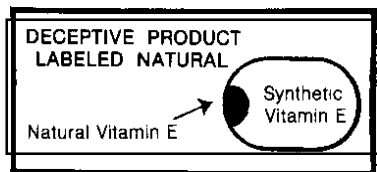
Examples of Synthetic Vitamin E:

dl-alpha tocopherol; dl-alpha tocopheryl acetate; dl-alpha tocopheryl succinate

HOW CAN I IDENTIFY A PRODUCT CONTAINING A BLEND OF NATURAL AND SYNTHETIC VITAMIN E?

There are some Vitamin E products which are blends of synthetic and natural Vitamin E that are labeled in such a way as to give the impression that they contain 100% natural Vitamin E. If the Vitamin E in a product is identified only by the words "Natural Vitamin E" or "Alpha Tocopherol", the Vitamin E could be from a natural source, from a synthetic source, or be a blend of both; the label does not specify. Since natural Vitamin E is more costly and more in demand than synthetic

Vitamin E, the chance is great that this may be a synthetic blend



product, the chance is very great that a product labeled in this manner contains all synthetic or a blend of synthetic and natural.

Beware of phrases such as "in a base of wheat germ oil" or "with mixed tocopherols" as they can be used on a label to disguise the presence of synthetic dl-alpha tocopheryl acetate.

WHAT IS THE DIFFERENCE BETWEEN TOCOPHEROL AND TOCOPHERYL?

Tocopherol is spelled tocopheryl when the word acetate or succinate follows it, as: alpha tocopheryl acetate, alpha tocopheryl succinate.

The **o** and **y** do not tell you whether the Vitamin E is from synthetic or natural sources. Alpha tocopherol can be of natural or synthetic origin. Alpha tocopheryl acetate can be of natural or synthetic origin.

WHAT IS VITAMIN E ACETATE?

Vitamin E acetate is naturally a clear, golden oil at room temperature. It can be from either natural or synthetic sources: d-alpha tocopheryl acetate is from natural sources. dl-alpha

tocopheryl acetate is from synthetic sources.

Acetate is from acetic acid, another name for vinegar. It is a very weak acid found in and around cells all over the human body. When a small amount of it is combined with alpha tocopherol, d-alpha tocopheryl acetate is formed which has the added advantage of being very stable in light and air over long periods of time. The acetate form of Vitamin E is also stable when combined with other nutrients in vitamin preparations. When swallowed, the acetate is removed in the digestive system and the Vitamin E again becomes d-alpha tocopherol with its full antioxidant benefit.

Carlson features two products containing 100% natural-source d-alpha tocopheryl acetate. They are called E-Gems and d-Alpha Gems.

WHY DRY VITAMIN E SUCCINATE?

Vitamin E succinate is a dry powder at room temperature and free of added vegetable oil. It is from natural sources when written: d-alpha tocopheryl succinate, or d-alpha tocopheryl acid succinate.

Succinate is derived from succinic acid which is an organic substance found in and around cells of the human body. Succinic acid is a combination of two acetic acid (vinegar) molecules. In the body, the succinate is removed and the d-alpha tocopheryl succinate becomes d-alpha tocopherol.

Dry Vitamin E succinate is tasteless and the powder can be sprinkled onto foods or chewed as a tablet. It is the form of Vitamin E used frequently in multiple vitamin tablets because of its dryness and its stability in combination with other vitamins.

For those who experience difficulty digesting oils, the succinate form of Vitamin E is gentler to the stomach than other forms of Vitamin E due to the absence of added vegetable oil.

Key-E Tablets and Key-E-Kaps are Carlson's natural-source Vitamin E Succinate tablets and capsules.

WHAT IS THE DIFFERENCE BETWEEN ALPHA & MIXED TOCOPHEROLS?

Alpha tocopherol (or alpha tocopheryl) is considered to be Vitamin E.

"Mixed tocopherol" Vitamin E preparations contain alpha and non-alpha tocopherols. Non-alpha tocopherols are commonly found in foods containing Vitamin E and have antioxidant properties. There is some speculation they may enhance the antioxidant ability of alpha tocopherol. The three non-alpha tocopherols are called beta, gamma and delta tocopherols. The four tocotrienols are called zeta, epsilon, eta and 8-methyl tocotrienols.

WHAT INFORMATION SHOULD I LOOK FOR ON LABELS OF MIXED TOCOPHEROL PRODUCTS?

1. The amount of Alpha Tocopherol stated in I.U.
2. The amount of Non-Alpha Tocopherols stated in mg.

For example, the label copy on E-Gems Plus [Carlson's Mixed Tocopherol Vitamin E] states that each capsule contains:

400 I.U. (268 mg.) of Vitamin E in the form of d-alpha tocopherol, plus 67 mg. of non-alpha tocopherols including d-beta, d-delta and d-gamma tocopherols.

Since alpha tocopherol is measured in International Units (I.U.) and non-alpha tocopherols are measured in milligrams (mg.), a potency in International Units does not indicate the amount of mixed tocopherols present, but only the amount of alpha tocopherol contained in a product.

NOTE: If the milligram (mg.) amount of non-alpha tocopherol in the product is not stated on the label, the product probably contains very little or insignificant amounts of non-alpha tocopherols.

ARE WATER-SOLUBILIZED FORMS OF VITAMIN E

Medical data is for informational purposes only. You should always consult your family physician, or one of our referral physicians prior
BETTER ABSORBED THAN TRADITIONAL OIL-BASED FORMS?

Research shows that many people are unable to absorb the full potency of fat-soluble vitamins, such as Vitamin E. Water-solubilization, water-dispersion and emulsification are methods developed to improve fat-soluble nutrient absorption. Some of these water-solubilized, dispersed and emulsified preparations of Vitamin E have been shown to increase the absorption of Vitamin E over traditional oil-based preparations, however, others did not increase Vitamin E absorption.

The manner in which the Vitamin E is solubilized determines how much increased absorption will be derived from a particular Vitamin E preparation. Carlson Laboratories now offers a water-solubilized natural-source Vitamin E [AQUA GEM-E] that is Prepared by a new patent-pending process scientifically proven to increase Vitamin E absorption.

Carlson AQUA GEM-E provides greater Vitamin E absorption than both water-dispersed and oil-based preparations of Vitamin E.

CAN I GET BETTER RESULTS FROM ONE FORM OF NATURAL VITAMIN E THAN FROM ANOTHER FORM?

It is possible to have different results from different forms of natural Vitamin E. Perhaps the most obvious reason is found in the theme of Roger William's book, BIOCHEMICAL INDIVIDUALITY, which indicates all individuals are biochemically different from one another. This means that one person may be able to use a particular type of natural Vitamin E more effectively than another type. For example, natural d-alpha tocopheryl succinate may produce better results for an individual than natural d-alpha tocopheryl acetate or d-alpha tocopherol.

Dr. Evan V. Shute, internationally renowned for his extensive clinical work with Vitamin E, brought to our attention twenty years ago that some people experience better results with natural-source Vitamin E succinate than with other forms of Vitamin E. Professor K. Prasad and his colleagues at the University of Colorado School of Medicine have recently found medical conditions that respond solely to this Succinate form of Vitamin E. His research continues into the benefits of Vitamin E Succinate.

Vitamin E succinate is supplied by Carlson KEY-E products.

WHAT IS THE DIFFERENCE BETWEEN INTERNATIONAL UNITS (IU) AND MILLIGRAMS (MG)?

Milligrams (mg) is a weight measurement. International Units (IU) is a system currently being used in the United States to more accurately express the biological potency of certain fat-soluble nutrients such as Vitamin E. On a weight-to-weight basis, all forms of Natural Vitamin E have far greater biological activity than Synthetic Vitamin E. According to research conducted by Dr. Max Horwitt on humans and Dr. Ames on animals, on an IU to IU basis, Natural Vitamin E has more biological activity than Synthetic Vitamin E.

CAN VITAMIN E BE USED ON THE SKIN?

Yes, it can be beneficial to apply Vitamin E to irritated or injured skin while taking it orally because Vitamin E is involved in the formation of new cells that replace damaged cells on the outer layer of the skin. Vitamin E has been found to be helpful in counteracting the premature aging of the skin, often characterized by dry, itchy skin. A protective coating of Vitamin E ointment can aid damaged areas in the healing process.

Carlson offers a variety of topical natural-source Vitamin E preparations for the skin, including Vitamin E creams, ointments, spray, oil drops, suppositories, and lip care stick.

CAN IRON AND VITAMIN E CONFLICT WHEN TAKEN TOGETHER?

Yes, they can. The Shute Institute was the first to discover and announce that inorganic iron, as ferrous sulfate, can be destructive to the Vitamin E when the two are taken together. They suggest that when inorganic iron and Vitamin E are taken, they be separated in the stomach by an interval of eight to nine hours.

Organic iron, however, such as found in raisins, spinach and other iron-rich foods, can be taken at the same time as Vitamin E, with no harm to the Vitamin E. Moderate amounts of organic iron supplements, as certain iron amino acid chelate, can also be taken with Vitamin E.

DOES VITAMIN E WORK WITH OTHER NUTRIENTS?

Vitamin E has been shown in some studies to protect Vitamin A, Carotenes and essential fatty acids in body tissues from oxidation damage. Vitamin E also works synergistically with Selenium as antioxidants.

WHY DO PHYSICIANS RECOMMEND CARLSON VITAMIN E?

Physicians know they can trust the quality of Carlson Vitamin E. They are confident their patients will receive 100% Natural Vitamin E with full labeled potency guaranteed.

REFERENCES:

1. Recommended Dietary Allowances. 9th revised ed. Washington, D.C.: National Academy of Sciences, 1960.
2. Human Biochemistry, Kilenner & Orten, 5th ed. p. 389.
3. Organic Chemistry. Morrison & Boyd, 3rd ed. p. 584.
4. Benefits from Human Nutrition Research. Report No. 2. Dept. of Agriculture. August, 1971.
5. "Vitamin E: a reexamination." M.K. Horwitt, Ph.D., Am. J. Clin. Nutr. 29 pp. 569-578
6. "Absorption and Retention of Vitamin E Compounds in Adult Humans." M.K. Horwitt, Ph.D., 1984 Federation of American Societies for Experimental Biology.
7. "Relative Biological Values of D-A-Tocopheryl Acetate and All-Rac-A-Tocopheryl Acetate in Man." M.K. Horwitt, Ph.D., Am. J. of Clinical Nutr. 1980. 33, pp. 1856-1860.
8. "Effects of Tocopherol (Vitamin E) Acid Succinate on Morphological Alterations and Growth Inhibition in Melanoma Cells in Culture." K.Prasad, Ph.D. Cancer Research. February, 1982. 42, pp. 550-555.