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Supplement to *The Art of Getting Well* Vitamin C: How to Use The Great Missing Vitamin

Sources are given in references. Authors of contributions/quotations are alphabetically arranged; major author, if any, is underlined. Robert F. Cathcart, III M.D., Nancy Chandler, A. Kalokerinos, Fred R. Klenner, M.D., Linus Pauling, Ph.D., Irwin Stone, Anthony F. Verlangieri, Ph.D., Jonathan V. Wright, M.D./writer Anthony di Fabio.

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Robert Cathcart, M.D.

You are probably familiar with Linus Pauling's views in favor of the heavy use of Vitamin C¹, one of the great anti-oxidants. Much original work with large dosages of Vitamin C was done by Fred R. Klenner, M.D. of North Carolina. Dr. Klenner found that viral diseases could be cured by intravenous sodium ascorbate in amounts up to 200 grams per 24 hours.

Irwin Stone² pointed out the significance of Vitamin C in the treatment of many diseases, and also that humans were unable to synthesize ascorbate, resulting in the medical condition called hypoascorbemia -- diseases attributed to or caused by the insufficiency of Vitamin C.

Linus Pauling, Ph.D., reviewed the literature on Vitamin C and led the crusade to make it known to the public and the medical profession.

Ewing Cameron in association with Linus Pauling showed the usefulness of ascorbate when treating cancer¹.

It is of great significance that humans, primates, guinea pigs and a very small number of bird species are unable to synthesize Vitamin C. An easy conclusion to reach is that all of these

mammals passed through an evolutionary period where each lost the ability to synthesize Vitamin C. Irwin Stone described the genetic defect -- whereby higher primates lost the ability to synthesize ascorbate -- as caused by a mutated defective gene for the liver enzyme L-gulonolactone oxidase. All higher mammals except primates, guinea pigs and the few bird species mentioned developed a biochemical feedback mechanism which causes an increase in ascorbate synthesis under the influence of external or internal stresses.

Robert F. Cathcart, M.D.⁴, of California, in his paper "Vitamin C, Titrating to Bowel Tolerance, Anascorbemia, and Acute Induced Scurvy", presents his brilliantly developed clinical findings demonstrating rather clearly how the body tolerates increasing amounts of Vitamin C when it is under the stress of various diseases. He shows from his clinical findings on 9,000 patients that the body's ability to absorb Vitamin C is directly proportional to the severity of stress and/or disease. Diseases improve or are cured by his "bowel tolerance" measuring technique for determining the exact amount of Vitamin C required by the body at the moment, and he will label a "100 gram cold," for example, when the cold requires 100 grams to be rid of its symptoms, a "50 gram cold" when it takes but 50 grams, and so on.

Mammals that do not have the ability to synthesize Vitamin C are at a distinct disadvantage, and obviously can be affected by external organisms and stress more easily than those that can synthesize their Vitamin C. Those that do so, synthesize Vitamin C with a precision that would shame most scientific laboratories. They manufacture and meter out throughout their bodily systems exact quantities of Vitamin C dependent upon their present degree of stress and their degree of need for a given set of infections. The more infection and/or stress, the more Vitamin C is manufactured. The less infection and/or stress, the less Vitamin C is manufactured. Haven't you ever wondered how it is that certain pets, like dogs and cats, can eat bacteria-ridden garbage and, providing they are not poisoned, they have no difficulty in staying healthy?

Whether establishment physicians accept the fact or not, tens of thousands -- no hundreds of thousands -- have already verified good results through usage of Vitamin C. Many of our referral physicians know and use these techniques to fight infection, reduce stress and to assist the immunological system.

When using EDTA Chelation Therapy, Vitamin C along with other vitamins and minerals are added. Vitamin C can be used intravenously by itself in sufficiently large dosages to reverse a number of otherwise intransigent disorders that have a causation based on free-radical pathology. Cathcart says: "Well nourished humans contain not much more than 5 grams of Vitamin C in their bodies. The majority of people have much less, and therefore are at risk for many problems related to failure of metabolic processes that depend on ascorbate. Stone calls this condition 'chronic subclinical scurvy'.

"Some of the increased need for ascorbate," Cathcart relates, "occurs in areas of the body not primarily involved in the disease and can be accounted for by such functions as the adrenals producing more adrenalin and corticoids; the immune system producing more antibodies, interferon, and other substances to fight infection; the macrophages utilizing more ascorbate with their increased activity; and production and protection of a substance called c-AMP and c-GMP with subsequent increased activity of other endocrine glands, and so on." Cathcart continues with "... there must be a tremendous draw on ascorbate locally by increased metabolic rates in the primarily infected tissues. The infecting organisms themselves liberate toxins which are neutralized by ascorbate, but in the process destroy ascorbate. The

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levels of ascorbate in the nose, throat, eustachian tubes and bronchial tubes locally infected by a 100 gram cold must be very low, indeed. With this acute induced scurvy localized in these areas, it is a small wonder that healing can be delayed and complications such as chronic sinusitis, otitis media and bronchitis, etc. develop."

For a cold in the nose, there is a lack of vitamin C in that portion of the anatomy. Linus Pauling recommends 3.1 grams of sodium ascorbate in 100 ml of water. Use 20 drops into each nostril with an eye dropper. This gives local concentration of 1000 times more than oral dosages would provide¹.

Cathcart adds that from his personal experience and from that of patients, it is apparent that the adrenals are capable of utilizing large amounts of ascorbate with benefit if made available. According to Cathcart, the following medical problems should be expected with increased incidence as ascorbate is depleted: "disorders of the immune system such as secondary infections, Rheumatoid Arthritis and other collagen disease, allergic reactions to drugs, foods and other substances, chronic infections such as herpes, or sequelae of acute infections such as Guillain-Barre' and Reye's syndromes, rheumatic fever, or scarlet fever; disorders of the blood coagulation mechanisms such as hemorrhage, heart attacks, strokes, hemorrhoids, and other vascular thrombosis; failure to cope properly with stresses due to suppression of the adrenal functions such as phlebitis, other inflammatory disorders, asthma and other allergies; problems of disordered collagen formation such as impaired ability to heal, excessive scarring, bed sores, varicose veins, hernias, stretch marks, wrinkles, perhaps even wear of cartilage or degeneration of spinal discs; impaired function of the nervous system such as malaise, decreased pain tolerance, tendency to muscle spasms, even psychiatric disorders and senility; and cancer from the suppressed immune system and carcinogens not detoxified; etc."

Cathcart does not say that ascorbate depletion is the only cause for the diseases above, but that a lack of the Vitamin can predispose to these diseases and that each one of the systems involved in the above diseases are known to be dependent upon ascorbate to function properly. Further, that patient improvement has been noted when Vitamin C has been provided in proper amounts by himself and others, including A. Kalokerinos and F.R. Klenner³.

All readers should rush out to the local health food store and purchase Vitamin C tablets. Right? Wrong! The problem with tablets is this: Tablets contain ascorbic acid or Sodium or Calcium ascorbate crystals held together by binders. If you were to take a sufficient amount of ascorbic acid in this form to alleviate most conditions, you would discover yourself with diarrhea from some of the binders alone, and this would happen long before you determined the correct "bowel tolerance level" dosage of Vitamin C for your present condition.

Vitamin C is also often quite expensive when purchased in tablet form in large quantities from retail health products outlets. You need to find a source of ascorbate that is reasonably low cost, without binders, and purchase it in large quantity, so that you feel free to add the Vitamin C to your diet as a supplement each day. How much you should take is to be determined by your physical condition, amount of stress, whether or not seriously ill, and so on. The means of determining the proper amount will be described via Cathcart's "Bowel Titration" technique.

Another fact you should know is that ascorbic acid, sodium ascorbate and calcium ascorbate are physiologically equivalent with ascorbic acid being, weight for weight, slightly more concentrated. One good source for all three of the above is from Bronson Pharmaceuticals, 4526 Rinetti Lane, La Canada, CA 91011-0628. You can order soluble, fine crystals of Vitamin

C in 1 kilo quantities for ascorbic acid and sodium ascorbate, and in 1 pound quantity for calcium ascorbate. You will find it to your advantage to have all three, as the ascorbic acid can be added to fruit drinks and other fluids where the sodium and calcium ascorbate would not taste quite right, and vice versa. The two ascorbates are virtually tasteless (with a very light salty flavor, if anything), and the ascorbic acid is tart, as an acid should be. All three can be mixed in water.

To avoid overbalancing mineral ratios, by taking too much sodium as compared to calcium, one can mix the two ascorbates, sodium and calcium -- and one can also supplement with magnesium and whatever minerals that your physician recommends, the magnesium in dosages of equal weight to the calcium intake.

Cathcart's "Bowel Tolerance" technique is simple to apply. A normal person can probably get by very well on between 4 and 15 grams per 24 hour period. This includes, of course, the amounts you consume via green peppers, lettuce, fruits and so on. When one comes down with a sickness, or has been under unusual stress, one increases the amount of Vitamin C consumed each 24 hours to the point where diarrhea just begins -- then one backs off to the dosage used the day prior to the diarrhea. That "just lower than required to produce diarrhea," is the exact amount your body needs for the time being. *Only ascorbic acid can be used for determining by bowel tolerance the correct amount of Vitamin C that is required!*

It may be necessary to increase your dosages by amounts of 5, 10, 15, ... grams per 24 hour period until you find the correct dosage. These are monitoring matters best left up to you and your personal experiences. I usually take 2 grams in the morning and evening or between 3 and 5 grams per day, as a regular maintenance routine. It is easy and convenient -- using a 1/4 measuring teaspoon laying beside one of the Vitamin C containers -- to quickly slip 1 gram into my water or cold drink, whether it is fruit or soda pop. (One quarter teaspoon approximates 1 gram of powdered or crystalline Vitamin C.) You can add the same quantity, or more, to a glass of orange juice, or any other fruit juices, but I would recommend using ascorbic acid, as it is the natural taste of fruits. You should know that the amount of Vitamin C that you consume in a commercially prepared fruit drink is insignificant and not really enough to talk about, and certainly not sufficient to produce a disease cure! As presented at the Second Annual Rheumatoid Disease Cure Foundation Medical Seminar, Cathcart's findings were shown, as follows:

USUAL BOWEL TOLERANCE DOSES

Condition	Grams Per 24 Hours	Number of Doses Per 24 Hours
Normal	4-15	4
Mild Cold	30-60	6-10
Severe Cold	60-100	8-15
Influenza	100-150	8-20
ECHO, Coxsackievirus	100-150	8-20
Mononucleosis	150-200+	15-25
Viral Pneumonia	100-200+	15-25
Hay Fever, Asthma and Food Allergy	0.5-50	4-8
Burn, Injury, Surgery	25-150	6-20
Anxiety, Exercise and Other Mild Stresses	15-25	4-6
Cancer	15-100	4-15
Ankylosing Spondylitis	15-100	4-15
Reiter's Syndrome	15-60	4-10
Acute Anterior Uveitis	30-100	4-15

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Rheumatoid Arthritis	15-100	4-15
Bacterial Infections	30-200+	10-25
Infectious Hepatitis	30-100	6-15
Candida Infections	15-200+	6-25

According to Cathcart, disease symptoms will persist until the amount of Vitamin C reaches about 80-90% of bowel tolerance dosages. Perhaps it is only near this tolerance that the ascorbate is pushed into the primary sites of the disease. Further, suppression of symptoms in some instances may not be total, but usually it is very significant and often the amelioration is complete and rapid.

If you try this procedure and find that your bowels emit a great deal of gas to the point of discomfort as you increase daily dosages, then you are one who has "gas-forming" microflora throughout your intestines, such as, but not only as, *Candida albicans*. The gas is usually non-odorous carbon dioxide, and usually, a by-product of yeast organisms, and others. This indicates a problem that should be handled if you are to have good absorption of digested foods, and if you are to successfully use the Cathcart technique. (See "Candidiasis: Scourge of Arthritics," <http://www.arthritistrust.org>.)

According to Cathcart, *the Bowel Tolerance test should be made only with ascorbic acid*, but once the tolerance dosage is learned, for that particular problem, then you can use the other ascorbates. For general maintenance dosages, either ascorbic acid or the sodium or calcium ascorbates are O.K. As I've mentioned earlier, every person responds to substances differently. Vitamin C is no exception. According to Cathcart, at least 80% of his patients tolerated ascorbic acid well. Perhaps among those who did not are those who also had the gas generation problem from organisms that did not belong to the human symbiote family. (See "Friendly Bacteria -- Lactobacillus acidophilus & Bifido bacterium," <http://www.arthritistrust.org>.)

Evidently Vitamin C when taken properly can provide an important supplement to restoring the body's natural health just as EDTA Chelation Therapy restores the ability of the cell to nourish itself. (See "Chelation Therapy," <http://www.arthritistrust.org>.)

While degenerative arthritis will sometimes be improved, it is the various inflammatory Rheumatoid Diseases where most improvement shows, using Vitamin C therapy. There are probably several reasons why. There is, first, the general free-radical scavenging effect of Vitamin C that can temporarily, at least, clean-out damaging inflammatory products and toxins. Then there is the fact that Vitamin C when placed in all organs and tissues in appropriate amounts for a given person will permit the bodily functions to behave properly. Third, there is the fact of eliminating altogether, or at least reducing attacks on, tissues by foreign invaders, thus helping ourselves in the restoration of health or to maintain health. There is also a related factor where Vitamin C can block allergic reactions with augmented adrenal functions, and allergic reactions may be prevalent in a large number of Rheumatoid Arthritis patients as well as in Candidiasis patients. Remember, Candidiasis almost certainly accompanies many who have Rheumatoid Diseases. Finally, and maybe most importantly, Vitamin C in proper dosages has the ability to relieve stress that produces continuous and damaging cortisol via the adrenal glands.

Maintenance dosages are difficult for a physician to state properly, as the individual needs of the patient varies greatly and, also, the needs vary considerably in terms of degree of stress and sickness of the moment. Each Rheumatoid Arthritis victim must learn and make quantity determinations for him/herself.

In addition to a multiplicity of uses that the human body has

for Vitamin C, its concentration "directly determines the stability of the tissues. It does so primarily via the protein collagen, which has a similar function in the human body as the iron reinforcement has in a skyscraper. As a consequence of acute Vitamin C deficiency the connective tissue dissolves and the body literally breaks apart, as we know from the sailors' disease scurvy⁵." This is of immediate concern to every kind of arthritic. "While acute and complete Vitamin C depletion are essentially unknown today, chronic dietary Vitamin C deficiency is widespread. The consequences of insufficient Vitamin C intake over decades on the tissues of the body, in particular on the wall of the blood vessels, is disastrous. The sequence of events is

"a. decrease of stability and elasticity of the blood vessel walls by Vitamin C deficiency

"b. loss of the cellular barrier between bloodstream and vessel wall,

"c. increased infiltration and massive deposition of dangerous blood constituents in the vessel wall,

"d. development of atherosclerosis, in particular at those sites where high pressure and turbulences prevail (e.g. at those arteries close to the heart),

"e. narrowing of the vessel diameter and decrease of the blood circulation,

"f. eventually heart attack and stroke occur. . . . Heart disease is an early stage of scurvy, a chronic Vitamin C deficiency of the body tissues⁵."

Our intake of Vitamin C has either been excreted or utilized within 24 hours of ingestion, according to Jeffrey Bland, Ph.D., President of Health-Comm, Inc⁶. It is important, therefore, that we eat foods containing this essential vitamin daily, or supplement with a good source.

Inter-Cal Corporation of Arizona has produced a new form of Vitamin C called Ester-C PolyascorbateTM, which, according to the research of Anthony F. Verlangieri, Ph.D. of Oxford, Mississippi, "reaches and maintains blood levels more rapidly than ordinary Vitamin C⁶; and, according to the research of Jonathan V. Wright, M.D. "produced higher intracellular ascorbate levels, . . ." was retained by the body longer, and produced less oxalate excretion, "presumably creating less risk of oxalate kidney stones⁶."

According to Nancy Chandler, VicePresident of Operation at Inter-Cal Corporation, ". . . the chelated form of Ester-C's ascorbate has ideal characteristics: resistance to oxidation while in the gut, rapid transport out of the gut, and facile dissociation when in blood or tissues⁷." Chandler also comments that Ester-C has had much of its acidity removed, and therefore there is no laxative, or other side effects from its use when higher doses are taken.

Ester-C is an interesting product, and deserves to be investigated and used by those in need of large quantities of Vitamin C. If you do not find the product available nearby, then Inter-Cal Corporation, 421 Miller Valley Road, Prescott, AZ 86301, can tell you how to obtain it.

One last point, from personal experience: I once poo-pooed use of large quantities of Vitamin C as I was taught by very well meaning "establishment" physicians that I got sufficient vitamins and minerals in my daily foods. I didn't question at the time how others could know this when they did not follow me about daily to see how badly I ate or how lacking in nutrition was the food available for purchase. I took Vitamin C in tablet form only a few milligrams per day, and saw absolutely no effect on colds. Not until reading Cathcart, Pauling, Stone and others did I realize how truly ignorant and almost superstitious we are in protecting "establishment" medical Authoritarianism.

I suffered from colds and flu as a child, throughout my

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teens, and throughout the next forty years, until I began following Pauling's advice with sufficient quantities of Vitamin C. I am almost never sick from those diseases, at most, perhaps once a year or less. And even then, it lasts but several days, and I'm well again.

Vitamin C in large dosages may not cure Rheumatoid Disease, but it will sure make life easier -- and protect your body while doing so!

References

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5. "How Vitamin C Can Prevent Heart Attack and Stroke," *The Linus Pauling Institute of Science and Medicine Newsletter*, March 1992.
6. *The Key to the Power of Vitamin C, Ester-C PolyascorbateTM*, Inter-Cal Corporation, 421 Valley Road, Prescott, AZ 86301.
7. Nancy Chandler, Personal Letter from Inter-Cal Corporation, May 3, 1989.

Bill Burke writes:

I have had osteoarthritis (known, that is) for 23 years, manifesting itself in the following sequence: neck, hands, left hip, left knee. I lived on aspirin and Indocin until early 1978, when a piece in the *Saturday Review* by Norman Cousins prompted me to give high-dose Vitamin C a secret trial. (I was a complete skeptic, and didn't want to look like a fool if the stuff didn't work). Reading between the lines, I picked 10 grams per day as a large dose; being a total neophyte and naive, I had to feel my way in the dark. On the 4th day the improvement was so marked that I experimentally dropped Indocin and did not miss it at all. In time I experimentally dropped aspirin for a week; it was a miserable week, and I went back on aspirin thankfully. Some time later I read (*Chemtech*, Feb. 1978) an interview with Robert F. Cathcart, III, M.D., an orthopedic-surgeon-turned-general-practitioner, who had discovered the bowel-tolerance phenomenon: i.e., that instead of being a nuisance side effect encountered by some people taking larger-than-vitaminlike doses of ascorbic acid, diarrhea is a God-given indicator that any person has taken more than he can absorb, and therefore more than he needs, at any given time. Having learned how to establish my needed intake, I quickly found that on about 30 grams per day I was without pain and essentially without discomfort. That was in May of 1978. From that time (to June 1984) I have never taken an aspirin or other painkiller and have needed none. (Which is not to say that I have never had discomfort since, but rather that when I have it, either more C will help or nothing will help.)

Wanting to know what was the rationale, if any, behind this dramatic relief (and freeing from synthetic drugs), and also why my doctor didn't know about it (I having previously been a leading exponent of the If-it's-any-good-my-doctor-will-tell-me-about-it school of thought), I began to read and correspond intensively. In the ensuing six years I have learned that there are at least two ways in which C encompasses the relief of arthritic (or any inflammatory) pain: (1) By competitively inhibiting the enzyme phosphodi-

esterase, it protects the cyclonucleotide cyclic AMP and thus makes more of the latter available to mediate the production of cortisone - - which, being home-made, does not have the undesirable side effects of the synthetic steroids; and (2) by maximizing the conversion of dietary linoleic acid into steroids; and (2) by maximizing the conversion of dietary linoleic acid into PGE-2, which among other things governs the inflammatory process. (Aspirin and the prescription anti-inflammatory drugs are prostaglandin blockers, but they do so rather indiscriminately, so that in suppressing the semi-Bad Guy E-2 they also tend to suppress the super Good Guy E-1. Since E-1, among other things, governs the production of T-lymphocytes, this accounts for the fact that these drugs depress the immune system.) (E-2 is by no means all bad, so it should not be suppressed totally. It is involved in protecting the stomach against ulceration, which explains why the prostaglandin blockers so often cause ulcers. One Rheumatoid Disease patient was -- before I got to her -- on Motrin, and had to have emergency surgery for a perforated ulcer. She later got the [recommended Arthritis Trust of America] treatment from Dr. Plagenhoef, and is now free of Rheumatoid Disease.) [See *Essential Fatty Acids are Essential*, <http://www.arthritis-trust.org>.]

It is probably significant that my left knee was the last joint to become arthritic, and was the one that had bothered me least.

It appears to me that Pybus' treatment [See *Intraneural Injections for Rheumatoid Arthritis and Osteoarthritis & The Control of Pain in Arthritis of the Knee*, <http://www.arthritis-trust.org>.] is designed to interrupt a source of stress on the knee long enough to allow nutrients (essentially protein and ascorbic acid) access to the cartilage so that repair may proceed. It would then seem that [your] "other health-improvement programs" should above all include a bowel-tolerance intake of Vitamin C. Not only for the repair aspects, but also for the relief of residual inflammation. (A recent paper states that L-arginine considerably speeds up the deposition of collagen in healing wounds in rats and might well do the same in humans, so perhaps adding L-arginine to the regimen might be prudent.)

It was thanks to Dr. Cathcart that I learned about Wyburn-Mason. Cathcart's paper asserts that while Rheumatoid Arthritis significantly increases bowel tolerance, Osteoarthritis doesn't. I wrote, about a year ago, to argue that point on the basis of my own high intake. He replied that he stood by his observation, and that if my allergies were not enough to account for my large need, then perhaps there was an unsuspected rheumatoid component in my arthritis; and he referred me to Wyburn-Mason's *Medical Hypothesis* paper of 1979. [See "The Roger Wyburn-Mason, M.D., Ph.D. Treatment for Rheumatoid Disease," <http://www.arthritis-trust.org>.] So in time I went to Dr. Plagenhoef and said I wanted to be tested for Rheumatoid Disease. All tests were negative. I said I wanted the [treatment] anyway. He resisted. I prevailed. In the 4th and 5th weeks I had an unmistakable Herxheimer reaction. After the 6th week my arthritis was significantly improved -- about 50%. More to the point, my bowel tolerance for C plummeted by 40%, showing that a chronic source of stress had been removed from my body.

While I was on the metronidazole treatment, incidentally, I used no prednisone. I simply increased my intake of Vitamin C as necessary to control the discomfort, which meant going as high as 4 grams an hour on the Herxheimer days. Exogenous steroids are not necessary -- not when Vitamin C so well facilitates the endogenous stuff.