

Vitamin C and Dr Linus Pauling & 75 Years of Ignored Reports

(OMNS, January 5, 2010) The medical literature has virtually ignored 75 years of physician reports and laboratory and clinical studies on successful high-dose vitamin C therapy.

Effective doses are high doses, often 1,000 times more than the US Recommended Dietary Allowance (RDA) or Daily Reference Intake (DRI). It is a cornerstone of medical science that dose affects treatment outcome. This premise is accepted with pharmaceutical drug therapy, but not with vitamin therapy. Most unsuccessful vitamin C research has used inadequate, low doses. Low doses do not get clinical results.

Investigators using vitamin C in high doses have consistently reported excellent results. High doses were advocated almost immediately after ascorbic acid was isolated by Albert Szent-Gyorgyi, M.D. (1893-1986). Notable early medical pioneers of high-dose vitamin C (ascorbate) therapy are Claus Washington Jungeblut, M.D. (1898-1976); William J. McCormick, M.D. (1880-1968); and Frederick R. Klenner, M.D. (1907-1984). More recently, important work has been published by Hugh D. Riordan, M.D. (1932-2005) and Robert F. Cathcart III, M.D. (1932-2007).

It Was 75 Years Ago Today

Dr. Jungeblut, Professor of Bacteriology at Columbia University, first published on vitamin C as prevention and treatment for polio, in 1935. (1) Also in 1935, Jungeblut showed that vitamin C inactivated diphtheria toxin. (2) By 1937, Jungeblut demonstrated that ascorbate inactivated tetanus toxin. (3) Between 1943 and 1947, Dr. Klenner, a specialist in diseases of the chest, cured 41 cases of viral pneumonia with vitamin C. By 1946, Dr. McCormick showed how vitamin C prevents and also cures kidney stones; by 1957, how it fights cardiovascular disease. Beginning in the 1960s, Dr. Cathcart used large doses of vitamin C to treat pneumonia, hepatitis, and eventually AIDS. For more than three decades, beginning in 1975, Dr. Riordan and his team have successfully used large doses of intravenous vitamin C against cancer. The use of doses of tens of thousands of milligrams of vitamin C per day may be the most unacknowledged successful research in medicine.

Heard this one before? "If vitamin C was that good, doctors would tell their patients to take a lot of it." It is surprising how many physicians have done precisely that.

What's that? Your doctor still doesn't? Why???? Decades of physicians' reports and controlled studies support the use of very large doses of vitamin C

Linus Pauling lectures on Vitamin C and Heart Disease

Linus Pauling alerts the world to the cause of heart disease: a chronic vitamin C deficiency. He was the holder of 48 honorary Ph.D.s, the world's only 2-time unshared Nobel prize laureate, and the founder of modern chemistry. Dr. Pauling was unequivocally certain **that too little vitamin C leads to elevated cholesterol levels, especially the Lp(a) variant of LDL (so-called bad) cholesterol**

that causes plaques in blood vessels. His unified theory of cardiovascular disease constitutes one of the greatest potential breakthroughs of modern science, yet this remarkable theory, and its intriguing claim that very low cost Lp(a) binding inhibitors will prevent and even dissolve arterial blockages, has been ignored by the pharmaceutical industry, the medical profession and the media.

August 13, 1993 By Michael Wooldridge, MAWooldridge@lbl.gov

One of the great scientific mavericks of this century spoke at LBL August 10, 1993 at a special seminar hosted by the Life Sciences Division's Lipoprotein and Atherosclerosis Group. **Linus Pauling, two-time Nobel laureate and the world's foremost vitamin C proponent, entertained an overflow crowd in the Bldg. 66 auditorium with a talk on Vitamin C and Heart Disease.**

The lively 92-year-old first gave a candid history of how he came to take up the vitamin C cause. He was introduced to the subject by biochemist Irwin Stone in 1966. Five years later, he would pen "Vitamin C and the Common Cold," and then boldly go on to champion vitamin C as a fighter of more serious diseases such as cancer.

According to Pauling, the vitamin's versatility in illness prevention arises from its role in the manufacture of collagen, the protein that gives shape to connective tissues and strength to skin and blood vessels.

One of the great misfortunes of human evolution, Pauling explained, was when our human ancestors lost their ability to manufacture vitamin C. Pauling thinks the trait was probably discarded at a time when our ancestors had a diet of vitamin-rich plants and didn't need to produce the vitamin themselves. This left today's primates (including humans) as one of the few groups of animals that must get the vitamin through the diet.

Ever since proto-humans moved out of fruit-and-vegetable-rich habitats, Pauling said, they have suffered great deficiencies of vitamin C. Pauling has forthrightly recommended that people make up for this deficiency with daily doses of vitamin C much greater than the 60 mg generally recommended.

He said our vitamin C consumption should be on par with what other animals produce by themselves, typically 10-12 grams a day. Pauling practices what he preaches, having gradually upped his daily doses of vitamin C from 3 grams in the 1960s to a hefty 18 grams today.

Pauling went on to discuss vitamin C's connection with lipoprotein-a, a substance whose levels in the blood have been linked to cardiovascular disease. Lipoprotein-a is also a major component of the plaques found in the blood vessels of atherosclerosis patients.

Pauling has published studies asserting that lipoprotein-a is a surrogate for vitamin C, serving to strengthen blood vessel walls in the absence of adequate amounts of the vitamin in the diet. In the lecture, Pauling noted that animals which, unlike humans, manufacture their vitamin C and have much higher levels of the vitamin in their bodies, have very little lipoprotein-a in their blood.

Pauling is convinced that doses of vitamin C can help prevent the onset of cardiovascular disease, inhibiting the formation of disease-promoting lesions on blood vessel walls and perhaps decreasing the production of lipoprotein-a in the blood. Vitamin C's link to healthy blood vessels, Pauling said, is further supported by studies of scurvy, the disease caused by vitamin C

deficiency. Fifty percent of patients who die of scurvy, he said, do so because of ruptured blood vessels.

Pauling won his first Nobel Prize in Chemistry in 1954 for using quantum mechanics to elucidate the nature of chemical bonds. He garnered a Nobel Peace Prize in 1962 for his efforts to stem nuclear weapons proliferation.

The scientist founded the Linus Pauling Institute in Palo Alto, where research on vitamin C and other nutrients continues today. He currently resides in Big Sur.

Vitamin C

Vitamin C, also known as ascorbic acid, is a water-soluble vitamin which is essential for normal functioning of the body. Unlike most mammals, humans don't have the ability to make their own vitamin C. We must therefore obtain vitamin C through our diet and/or Vitamin Supplementation.



Ideally one would take the natural form of vitamin C which is in fresh vegetables and fruits. One needs fresh non-processed vegetables and some fruits to obtain vitamin C. Juicing is a great way to get vitamin C through fruits and vegetables.

The FDA recommends that we get 60 mgs of vitamin C per day. Are there any benefits which can be obtained from consuming more Vitamin C than the FDA's recommended daily intake of a miserable 60mg - barely enough to keep one out of rags and scurvy.

Dr. Frederick Klenner was probably the leading authority on the clinical use of vitamin C. On the question of when vitamin C is appropriate Dr. Klenner said "Vitamin C should be given to the patient while the doctors ponder the diagnosis."

Dr. Linus Pauling on vitamin C

Dr Linus Pauling, often referred to as the "Father of Vitamin C" and twice awarded the Nobel Prize, declared that large intakes of up to 10 grams of vitamin C each day aids anti-cancer activity within the body.



Pauling was largely ridiculed for making these declarations, but today, large doses of Vitamin C are used by many practitioners for cancer patients in nutritional therapies, who believe Pauling was right and that vitamin C is indispensable to the body in its fight to regain health from cancer. .

Linus Pauling wrote the book, "How to Live Longer and Feel Better". (He also wrote "Vitamin C and the Common Cold") . I had heard of Linus Pauling and since living longer and feeling better sounded desirable, I bought the book. I was captivated. Pauling presents the case for Vitamin C supplementation so well and backs it up with so much evidence that this is a book I highly recommend.

To find out what Linus Pauling, 2-time Nobel Prize laureate, thought about vitamin C supplementation, let's look at an excerpt from an interview with Linus Pauling and Tony Edwards for QED BBC Television.

Q: What do you feel about the major criticism that anything over 100mg of vitamin C is a waste of money and goes down the drain because it's eliminated by the body?

A: The evidence shows that this is just not true. I myself, 20 years ago or more, read this statement, probably made by Fred Stare, professor then at Harvard School of Public Health, and I decided to check. I was taking 10 grams per day of vitamin C. I collected my urine for 24 hours and analyzed it myself for the vitamin C content.

Instead of nearly 10,000mg being eliminated in the urine, 9850mg, I found only 1,500mg, 15% of the dose that I was taking during this trial, so the statement just is not true. Of course, some of the ingested ascorbate remains in the intestinal contents and doesn't get into the blood stream. It may be as much as 1/3.

Some evidence indicates that perhaps as much as 1/3 remains in the intestinal contents. Well, this does good, protecting the lower bowel against cancer by destroying carcinogens that are present in the fecal material and also does good because of the laxative effect of bringing water into the bowel so that the volume of the waste material is larger.

There's also a smaller surface area which helps speed up the process of elimination of this material. The rest of it, 2/3 perhaps 6.5 grams when I was taking 10 grams a day, gets into the blood stream but only 1.5 grams is eliminated in the urine.

So we can ask what happens to the other 5 grams? The answer I'm sure, in fact we have direct experimental evidence for it, is that vitamin C is rapidly converted into other substances, oxidation products and these other substances, these oxidation products have been shown to have greater value against cancer than vitamin C itself.

So if you take large doses of vitamin C you produce large amounts of these other substances, the value of which is still under investigation. We have been studying it for fifteen years.

Q: How do you decide how much vitamin C is right for you and, if you take 3 grams should it be split throughout the day?

A. In my opinion adults should be taking at least 2 grams a day. There is much evidence about increased health with 2 grams a day, and of course even more with 4 or 6 grams a day. Even an extra 60mg had been shown to add value in cutting down the death rate from heart disease, cancer and other diseases. Now my feeling is as people grow older they ought to be increasing their vitamin C and perhaps they should follow the policy that I have followed of increasing the intake.

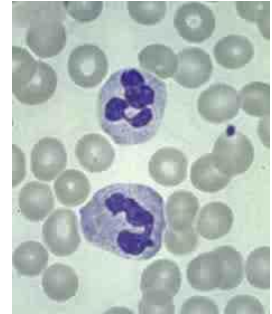
It can be either one chunk, one dose in the morning, or even better 3 doses throughout the day, increasing the intake until a laxative effect is observed, speeding up the rate of elimination of waste

material from the bowel. So my suggestion is every person who wants to have the best of health should increase the intake of vitamin C to somewhat less than the amount that causes significant looseness of the bowel.

Scientific studies and vitamin C

Are there any studies out there which actually show that vitamin C is beneficial? As the following studies demonstrate, vitamin C can enhance the immune function in a number of ways:

Healthy adults: In a 1981 study, healthy adults received 1 gram of vitamin C intravenously. One hour later, the neutrophil motility (how fast your white blood cells can move) and leukocyte transformation in the subjects' blood had increased significantly. Other studies support the finding that vitamin C enhances the leukocyte function. Vitamin C has also been shown to decrease bacteriological activity.(1)



Chronically ill adults: Recent studies indicate that vitamin C has a positive effect on patients suffering from a variety of chronic disorders. In one large study, 260 patients with viral hepatitis A took 300 mg of vitamin C/day for several weeks. The researchers, who studied immune indicators, such as serum immunoglobulin and neutrophil phagocytosis (how well your white blood cells can engulf and digest foreign bodies), concluded that vitamin C "exerts a remarkable immuno-modulating action."(2) - that's a complicated way of saying your immune system functions better because of it.

Vitamin C and heart disease

French and German researchers found that vitamin C appeared to keep cells in the blood vessel wall from dying. They believe this protection from cell death could explain previous study findings which suggest that vitamin C benefits blood vessel function in people with congestive heart failure.(3)

A study found that long-term administration of vitamin C reverses endothelial vasomotor dysfunction in patients with coronary artery disease. Researchers instructed patients with documented coronary artery disease to take a single oral dose of either 2 g vitamin C or a placebo. The dose of vitamin C improved dilation of the brachial artery, as assessed by a high-resolution vascular ultrasound done 2 hours later. The researchers reported that the effect was sustained among patients who subsequently took 1/2 gram of vitamin C daily for 30 days.(4)

Vitamin C and the risk of stroke

Individuals with high blood levels of vitamin C have significantly reduced risk of stroke, according to a recently published long-term study (5). "To my knowledge, this is the first prospective study to make the correlation between vitamin C in the bloodstream and incidence of stroke," says author Tetsuji Yokoyama, M.D., research associate in epidemiology at the Medical Research Institute of Tokyo Medical and Dental University. The risk of stroke was inversely related to vitamin C in the bloodstream in this study.

It is important to realize that ideally we should get our vitamin C from the foods we eat. Using supplements as a substitute for whole foods and expect to get healthy is delusional. You must

consume whole unprocessed foods to maximize your health. Good sources of vitamin C are green leafy vegetables, citrus fruits, tomatoes, berries, guavas, melons, papayas, etc.

Can vitamin C help to prevent or treat cancer?

Over the years, many studies have found that vitamin C is an effective anti-cancer agent. Vitamin C works in the following ways to help the body fight cancer cells:

Studies suggest that vitamin C's antioxidant mechanisms may help to prevent cancer in several ways. Vitamin C combats the peroxidation of lipids, for example, which has been linked to degeneration and the aging process. One study of elderly people found that 400 mg of vitamin C per day (for a one-year period) reduced serum lipid peroxide levels. Vitamin C can also work inside the cells to protect the DNA from the damage caused by free radicals.. In several studies, report the researchers Gaby and Singh, vitamin C reduced the level of potentially destructive genetic alterations or chromosome aberrations.(6)

Many of the pollutants which now pervade our environment can cause carcinogenic, toxic or mutagenic effects. Vitamin C may be able to combat these harmful effects, in part by stimulating detoxifying enzymes in the liver. In another study, vitamin C was shown to block the formation of fecal mutagens.(7)

Finally, vitamin C can reduce the development of nitrosamines from nitrates, chemicals which are commonly used in processed foods. Once formed, nitrosamine can become carcinogens. In several human studies(8), in which the subjects consumed a nitrosamine precursor, the urinary levels of nitrosamines were significantly reduced by vitamin C.

As far back as the 1940s, researchers began to note a connection between the incidence of cancer and low blood levels in the body or a dietary deficiency of vitamin C. Studies conducted in the past 10 years have confirmed that link. According to 2 studies from the early 1980s, 2 to 5 grams of vitamin C per day can correct these low serum levels and, in some patients, improve the defenses put up by the immune system. (9)

Based on numerous studies, it seems clear that there is a strong relationship between a person's vitamin C intake and cancer risk. In 1991, the American Journal of Clinical Nutrition conducted a comprehensive analysis of some 45 studies on vitamin C's protective effects against various types of cancer. Of these, 32 studies reported a significant link between vitamin C intake and the incidence of cancer. In fact, a high intake of vitamin C offered twice the protection of a low intake. Many of these studies defined a "high intake" as a daily dosage of 160 mg or more per day; a "low intake" generally was less than 70 mg.(10)

Vitamin C to prevent cataracts?

Cataracts are a leading cause of blindness in the U.S. Cataracts occur more frequently and become more severe as people get older.

Decreased vitamin C levels in the lens of the eye have been associated with increased severity of cataracts in humans. Some, but not all, studies have observed increased dietary vitamin C intake (11) and increased blood levels of vitamin C (12) to be associated with a decreased risk of cataracts.

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VITAMIN C, TITRATING TO BOWEL TOLERANCE, ANASCORBEMIA, AND ACUTE INDUCED SCURVY

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ABSTRACT

A method of utilizing vitamin C in amounts just short of the doses which produce diarrhea is described (TITRATING TO BOWEL TOLERANCE). The amount of oral ascorbic acid tolerated by a patient without producing diarrhea increases somewhat proportionately to the stress or toxicity of his disease. Bowel tolerance doses of ascorbic acid ameliorate the acute symptoms of many diseases. Lesser doses often have little effect on acute symptoms but assist the body in handling the stress of disease and may reduce the morbidity of the disease. However, if doses of ascorbate are not provided to satisfy this potential draw on the nutrient, first local tissues involved in the disease, then the blood, and then the body in general become deplete of ascorbate (ANASCORBEMIA and ACUTE INDUCED SCURVY). The patient is thereby put at risk for complications of metabolic processes known to be dependent upon ascorbate.

INTRODUCTION

Over the past ten-year period I have treated over 9,000 patients with large doses of vitamin C. The effects of this substance when used in adequate amounts markedly alters the course of many diseases. Stressful conditions of any kind greatly increase utilization of vitamin C. Ascorbate excreted in the urine drops markedly with stresses of any magnitude unless vitamin C is provided in large amounts. However, a more convenient and clinically useful measure of ascorbate need and presumably utilization is the BOWEL TOLERANCE. The amount of ascorbic acid which can be taken orally without causing diarrhea when a person is ill sometimes is over ten times the amount he would tolerate if well. This increased bowel tolerance phenomenon serves not only to indicate the amount which should be taken but indicates the unsuspected and astonishing magnitude of the potential use that the body has for ascorbate under stressful conditions.

If this massive draw on the small ascorbate stores of the body is not fully satisfied, the condition of ANASCORBEMIA results. The deficit of ascorbate probably starts in the tissues directly involved in the disease and then spreads to other tissues of the body. A condition of localized and then systemic acute scurvy is produced. This ACUTE INDUCED SCURVY leads to poor healing and ultimately to complications involving other systems of the body.

Much of the original work with large amounts of vitamin C was done by Fred R. Klenner, M.D. of Reidsville, North Carolina. Klenner found that viral diseases could be cured by intravenous sodium ascorbate in amounts up to 200 grams per 24 hours. Irwin Stone) pointed out the potential of vitamin C in the treatment of many diseases, the inability of humans to synthesize ascorbate, and the resultant condition hypoascorbemia. Linus Pauling) reviewed the literature on vitamin C and has led the crusade to make known its medical uses to the public and the medical profession. Ewan Cameron in association with Pauling) has shown the usefulness of ascorbate in the treatment of cancer.

BOWEL TOLERANCE METHOD

In 1970, I discovered that the sicker a patient was, the more ascorbic acid he would tolerate by mouth before diarrhea was produced. At least 80% of adult patients will tolerate 10 to 15 grams of ascorbic acid fine crystals in 1/2 cup water divided into 4 doses per 24 hours without having diarrhea. The astonishing finding was that all patients, tolerant of ascorbic acid, can take greater amounts of the substance orally without having diarrhea when ill or under stress. This increased tolerance is somewhat proportional to the toxicity of the disease being treated. Tolerance is increased some by stress (e.g., anxiety, exercise, heat, cold, etc.)(see Figure). Admittedly, increasing the frequency of doses increases tolerance perhaps to half again as much, but the tolerances of sometimes over 200 grams per 24 hours were totally unexpected. Representative doses taken by tolerant patients titrating their ascorbic acid intake between the relief of most symptoms and the production of diarrhea were as follows:

TABLE I - USUAL BOWEL TOLERANCE DOSES

CONDITION	GRAMS ASCORBIC ACID PER 24 HOURS	NUMBER OF DOSES PER 24 HOURS
normal	4 - 15	4 - 6
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+	12 - 25
viral pneumonia	100 - 200+	12 - 25

hay fever, asthma	15 - 50	4 - 8	
environmental 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	
rheumatoid arthritis	15 - 100	4 - 15	
bacterial infections	30 - 200+	10 - 25	
infectious hepatitis	30 - 100	6 - 15	
candidiasis	15 - 200+	6 - 25	