

Vitamin C Therapy

Historical Perspectives and Current Applications

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Vitamin C: The Pioneer

Frederick R. Klenner, MD [Oct. 22, 1907-May 20, 1984]

First doctor to fully realize what high-dose vitamin C could do, and proceeded to utilize it in that manner; published 28 papers documenting his results

Documented the ability of vitamin C to reliably cure many different acute infectious diseases and to reliably neutralize any toxin treated, when sufficiently dosed and administered for a long enough period of time

http://www.seanet.com/~alexs/ascorbate/197x/klenner-fr-j_appl_nutr-1971-v23-n3&4-p61.htm [good Klenner review]

What Has Vitamin C Already Been Proven to Do?

1. Kill/inactivate all viruses *in vitro* against which it has been tested. Prominent examples:

A. Poliovirus: vitamin C completely inactivated the poliovirus, ***rendering it completely non-infectious***, even when injected directly into the brains of monkeys. Jungeblut, 1935 [19870431]

B. Herpesviruses:

Holden and Resnick (1936) The *in vitro* action of synthetic crystalline vitamin C (ascorbic acid) on herpes virus. *Journal of Immunology* 31:455-462

Holden and Molloy (1937) Further experiments on the inactivation of herpes virus by vitamin C (*l*-ascorbic acid). *Journal of Immunology* 33:251-257

What Has Vitamin C Already Been Proven to Do?

1. Kill/inactivate all viruses *in vitro* against which it has been tested. Prominent examples:

C. Vaccinia viruses:

Kligler and Bernkopf (1937) Inactivation of vaccinia virus by ascorbic acid and glutathione. *Nature* 139:965-966

Turner G (1964) Inactivation of vaccinia virus by ascorbic acid. *J Gen Microbiol* 35:75-80 [14171261]

D. Tobacco mosaic virus:

Lojkin M (1936) A study of ascorbic acid as an inactivating agent of tobacco mosaic virus. *Contr Boyce Thompson Inst Pl Res* 8:455

What Has Vitamin C Already Been Proven to Do?

1. Kill/inactivate all viruses *in vitro* against which it has been tested. Prominent examples:

E. Bacteriophage viruses:

Murata (1975) Mechanism of inactivation of bacteriophage deltaA containing single-stranded DNA by ascorbic acid. [1214179]

Morgan (1976) The mechanism of DNA strand breakage by vitamin C and superoxide and the protective roles of catalase and superoxide dismutase. [181730]

Richter (1982) Rapid inactivation of bacteriophage T7 by ascorbic acid is repairable. [7044421]

Samuni (1983) On the cytotoxicity of vitamin C and metal ions. A site-specific Fenton mechanism. [6317379]

What Has Vitamin C Already Been Proven to Do?

1. Kill/inactivate all viruses *in vitro* against which it has been tested.

Prominent examples:

F. Enteroviruses:

Salo (1978) Inactivation of enteroviruses by ascorbic acid and sodium bisulfite. [29558]

G. Influenza virus:

Cheng (2012) [An *in vitro* study on the pharmacological ascorbate treatment of influenza virus]. [Article in Chinese] [22931805]

H. Rabies virus:

Amato G (1937) Azione dell'acido ascorbico sul virus fisso della rabia e sulla tossina tetanica. *Giornale di Batteriologia, Virologia et Immunologia* (Torino) 19:843-847; rabies virus inactivated *in vitro*

What Has Vitamin C Already Been Proven to Do?

2. Resolve all **acute** viral syndromes for which it has been adequately dosed. Prominent examples:

A. Polio: Vitamin C cured acute polio (60 of 60 cases)
(Klenner in 1949); full article:

http://www.seanet.com/~alexs/ascorbate/194x/klenner-fr-southern_med_surg-1949-v111-n7-p209.htm

Also, vitamin C cured acute but **advanced** polio and its associated **flaccid paralysis**:

(Klenner in 1951); full article:

http://www.seanet.com/~alexs/ascorbate/195x/klenner-fr-southern_med_surg-1951-v103-n4-p101.htm)

What Has Vitamin C Already Been Proven to Do?

2. Resolve all acute viral syndromes for which it has been adequately dosed. Prominent examples:

Years after Klenner's experience with polio, it was demonstrated that polio responded very well to high-dose vitamin C given orally as well, with 5 patients receiving between 50,000 and 80,000 mg given at various times over a 10-day treatment period. Greer, 1955 [13279345]

Another clinician showed much lower doses of vitamin C clearly accelerated the resolution time of polio patients, including normalizing elevated temperatures. Baur, 1952 [13021801]

What Has Vitamin C Already Been Proven to Do?

2. Resolve all acute viral syndromes for which it has been adequately dosed. Prominent examples:

Acute hepatitis:

Dalton, 1962 [13883259] (Six daily 2,000 mg injections)

Cathcart, 1981 [7321921] (Reported that he never had a single case of acute viral hepatitis fail to respond to properly dosed IVC, and that he never had a VC-treated hepatitis patient subsequently develop chronic hepatitis)

Orens, 1983 [6573223] (IV and oral)

What Has Vitamin C Already Been Proven to Do?

2. Resolve all acute viral syndromes for which it has been adequately dosed.

Dr. Klenner's approach to acute hepatitis:

Initial Rx was 500 to 700 mg of VC/kg body weight by vein, given every 8 to 12 hours. As well, a minimum of 10,000 mg VC orally every day. Routinely, resolution was seen in 2 to 4 days.

Klenner also resolved acute hepatitis with 5,000 mg of VC every four hours or so orally. Complete resolution was achieved in 4 days, utilizing a total of about 120,000 mg given.

(1974) Klenner F. Significance of high daily intake of ascorbic acid in preventive medicine. *Journal of the International Academy of Preventive Medicine* 1:45-69

What Has Vitamin C Already Been Proven to Do?

2. Resolve all acute viral syndromes for which it has been adequately dosed. Prominent examples:

Vitamin C repeatedly cured cases of viral encephalitis, many presenting in coma:

(July 1949) Klenner F. The treatment of poliomyelitis and other virus diseases with vitamin C. *Southern Medicine & Surgery* 111:209-214 [18147027]

(April 1951) Klenner F. Massive doses of vitamin C and the virus diseases. *Southern Medicine & Surgery* 103:101-107 [14855098]

(1953) Klenner F. The use of vitamin C as an antibiotic. *Journal of Applied Nutrition* 6:274-278

(1971) Klenner F. Observations of the dose and administration of ascorbic acid when employed beyond the range of a vitamin in human pathology. *Journal of Applied Nutrition* 23:61-88

What Has Vitamin C Already Been Proven to Do?

2. Resolve all *acute* viral syndromes for which it has been adequately dosed. Prominent examples:

Comatose New Zealand farmer with H1N1 “swine flu” directly prior to having life support discontinued (2010). See:

<http://peakenergy.com/video.php>

What Has Vitamin C Already Been Proven to Do?

2. Resolve all acute viral syndromes for which it has been adequately dosed. Prominent examples:

A. Measles (simple and complicated)

B. Mumps (simple and complicated); Klenner, 1949
[18147027]

C. Herpes infections, acute (chickenpox) Dainow, 1943 68
197; Zureick, 1950 [14908970]; (1974) Klenner 1 45

D. Rabies: vitamin C-treated guinea pigs had improved
survival Banic, 1975 [1191395]; No studies of humans
infected with rabies and treated with VC found

What Has Vitamin C Already Been Proven to Do?

3. Documented efficacy in non-viral infections.

Diphtheria, tetanus, staphylococcus, streptococcus, pseudomonas (all documented as **curable** with vitamin C therapy)

While vitamin C is an absolute virucide, it is:

1. **Often** bactericidal
2. **Almost always** bacteriostatic, and
3. **Always** strongly supportive of an optimally competent immune system. Clinically, properly-dosed vitamin C will resolve all acute and many chronic viral infections, as well as most acute infections resulting from other non-viral pathogens (Levy, 2002, *Curing the Incurable*)

What Has Vitamin C Already Been Proven to Do?

Vitamin C cured acute rheumatic fever:
[Massell (1950) 15412682]

Published in *The New England Journal of Medicine*, the authors only wanted to conclude that vitamin C had “antirheumatic activity” but that more research was needed; no significant additional research of this clinical application of vitamin C was ever found. It very much appeared as though the authors were afraid of what would happen if they were more definitive in their conclusions.

What Has Vitamin C Already Been Proven to Do?

3. Documented efficacy in non-viral infections.

Malaria (very positive responses to very low doses) [(1938)
Lotze H. Clinical experimental investigations in benign
tertian malaria. *Tropical Diseases Bulletin* 35 733]

Leprosy, typhoid fever, brucellosis, trichinosis

Dysentery (amebic and bacillary)

Trypanosomal infections (Chagas' disease); *in vitro*, VC &
GSH kill trypanosomes [(1937) Strangeways W.
Observations on the trypanocidal action *in vitro* of
solutions of glutathione and ascorbic acid. *Annals of
Tropical Medicine and Parasitology* 31 405]

What Has Vitamin C Already Been Proven to Do?

4. Documented as the ultimate nonspecific antitoxin and poison antidote, *in vitro* and *in vivo*:
 - A. Toxic elements (mercury, lead, chromium, arsenic, cadmium, nickel, vanadium, aluminum, fluorine); [Levy, 2002, *Curing the Incurable*, pp. 280-312]
 - B. Venoms (snake, spider); Klenner (1971) Observations of the dose and administration of ascorbic acid when employed beyond the range of a vitamin in human pathology. *Journal of Applied Nutrition* 23 61; Klenner (1974) Significance of high daily intake of ascorbic acid in preventive medicine. *Journal of the International Academy of Preventive Medicine* 1 45
 - C. Alcohol; Zannoni, 1987 [3304067]
 - D. Barbiturates; (1971 & 1974, Klenner, see above), Kao, 1965 [5899011]

What Has Vitamin C Already Been Proven to Do?

- 4. Documented as the ultimate nonspecific antitoxin and poison antidote, *in vitro* and *in vivo*:
- E. Toxic mushrooms; Laing, 1984 [6200941]; effectiveness of other antioxidants, ALA: Berkson, 1979 [366411]; NAC: Montanini, 1999 [10635453] (VC & antioxidant therapy still not a routine part of mushroom poisoning [Berkson article in NEJM])
- F. Pesticides, six different types; (2002) Levy, *Curing the Incurable*, pp. 267-271; (1971) Klenner 23 61
- G. Strychnine, tetanus; (1937) Jungeblut 33 203 [neutralized tetanus toxin *in vitro*], Dey, 1966 [5986216] [tetanus toxin neutralization *in vivo*], Dey, 1965 [14291219] [strychnine neutralization *in vitro*], Dey, 1967 [4383547] [strychnine neutralization *in vivo*]

What Has Vitamin C Already Been Proven to Do?

5. Definite benefits in the following:

A. Lyme, AIDS, *chronic* hepatitis

“Embedded pathogens;” vitamin C (or any other agent) cannot work optimally without physical access to the pathogen (high-dose, Multi-C approach often successful)

B. Common cold; a very high requirement of vitamin C needed for the total quantity of virus usually present

C. Tuberculosis; slow-growing, slow-reacting; massive amount of literature documenting benefits of C for this

D. Pertussis; combination infection/toxin

What Has Vitamin C Already Been Proven to Do?

6. Neutralize radiation toxicity and/or repair damage from it

Just as in any other type of free radical/oxidation environment, radiation exposure results from electron loss from the affected tissues/biomolecules

Basic research: Ala-Ketola, 1974 [4450227] [vitamin C could prevent death in rats from otherwise fatal whole body ionizing radiation exposure]

Clinical research, Kennedy, 2001 [11316150] [vitamins C and E prevented side effects of pelvic irradiation in cancer patients]

What Has Vitamin C Already Been Proven to Do?

6. Neutralize radiation toxicity and/or repair damage from it

In Japan, after the tsunami-induced nuclear plant breach, the Japanese College of Intravenous Therapy (JCIT) treated many individuals with vitamin C-centered therapies.

In an unpublished study, five Fukushima Nuclear Plant workers with heavy radiation exposure received IVC only twice monthly, along with the regular supplementation of oral liposome-encapsulated vitamin C, as well as alpha lipoic acid, selenium, and a multi-vitamin preparation. Over a two-month period, statistically significant drops were seen in a laboratory test for free DNA, as well as in a multifactorial Cancer Risk Score evaluation

Vitamin C and Cancer

Vitamin C exerts anticancer activity both in the test tube and in the body:

[Mikirova (2008), 18789157] (full article also available)

Report on three cases reported showing vitamin C to be a very effective cancer therapy:

[Padayatty (2006), 16567755] (full article also available)

Vitamin C and Cancer

Report on seven advanced cancer cases treated
successfully with intravenous vitamin C:

[Riordan (2004), 15377059] Full article available at:

[http://www.riordanclinic.org/research/articles/89023203.
pdf](http://www.riordanclinic.org/research/articles/89023203.pdf)

Many more similar scientific articles can be found
reaching the same conclusions about the effectiveness
of vitamin C as cancer chemotherapy.

Vitamin C and Cancer

Higher plasma levels of vitamin C are inversely
associated with risk of gastric cancer

[Jenab (2006), 16774936] Full article available

Vitamin C and Longevity

The *highest* plasma levels of vitamin C are associated with the *least* mortality from heart disease, as well as from cancer and all other causes. In 19,496 men and women, the risk of dying in the top 20% was about *half* the risk of dying in the bottom 20%

[Khaw (2001), 11247548]

[Loria (2000), 10871572] reached a similar conclusion.
Full article available.

Vitamin C and Coronary Heart Disease

High plasma vitamin C levels are associated with a lowered risk of coronary artery disease, independent of classical risk factors

[Boekholdt (2006), 16925857]

Vitamin C and Diabetes

Higher plasma vitamin C levels are inversely associated
with the development of diabetes

[Sargeant (2000), 10840986] Full article available

Vitamin C and Safety

Vitamin C has *no known toxic dosage* in patients without preexisting kidney disease.

“...194,054 g, or 427 lbs of IV vitamin C” were
“administered to 275 patients with no sign of kidney disease, or any other significant side effects over a 16-year period.”

(2002) Jackson et al. Full article available at:

http://www.riordanclinic.org/research/articles/89023765_jom.pdf

Vitamin C and Safety

In a Harvard study on 85,557 women with no history of kidney stones, vitamin C intake was not associated with risk of developing kidney stones. The Harvard researchers advised that “routine restriction of vitamin C to prevent stone formation appears unwarranted.”

[Curhan (1999), 10203369]

Vitamin C and Safety

Another large study, the Harvard Prospective Health Professional Follow-Up Study:

“The intake of high doses of vitamin C does not increase the risk of calcium oxalate kidney stones...” The members of the group with the highest vitamin C intake “had a lower risk of kidney stones” than those with the lowest intake.

[Gerster (1997), 9429689]

Vitamin C and Safety

Continuous vitamin C infusions of 50 grams daily were given over an eight-week period in terminal cancer patients with no definable negative side effects.

[Casciari (2001), 11384106] Full article available

Vitamin C and Safety

Serum vitamin C levels were examined in relation to the history of kidney stones in over 10,000 subjects, and **no** evidence was found to indicate that high vitamin C levels increased the prevalence of kidney stones. Conversely, the **higher** the vitamin C levels in the blood, the **lower** the incidence of kidney stones.

[Simon (1999), 10090119]

Vitamin C and Safety

Over 55 other factors, in addition to vitamin C, can raise urinary oxalate levels and increase the risk of stone formation, *in patients with preexisting kidney disease*. In pregnancy, for example, the urine becomes *as supersaturated* with calcium oxalate as in patients with established stone disease, but there is *no* increased risk of stones associated with pregnancy. Elevated urine oxalate is a risk factor for stone disease *in patients with preexisting kidney disease only*.

[Maikranz (1989), 2811052]

Vitamin C and Safety

Even though it is not used in most hospitals currently, high dose intravenous vitamin C is used widely around the world now in doctors' clinics and offices, with no definable evidence of harm in patients without preexisting kidney disease

[Padayatty (2010), 20628650] Full article available

Vitamin C and Safety

A person with normal kidney function can successfully kill himself with excess water ingestion. There is no established dosage at or beyond which such a person can reliably kill himself with vitamin C. Is water more toxic than vitamin C?

[Hayashi (2005), 15914312]

Vitamin C, Legal Considerations

Do you have the right to health care?

Most would say yes, in both the medical and legal arenas, but you do **not** have the unbridled right to health care with the following considerations:

1. Extraordinary expense (e.g., transplant)
2. Experimental and/or unproven nature
3. Substantial risk of severe side effects

Vitamin C, Legal Considerations

Conversely, as a patient, you **DO** have the right to any therapy that is:

1. Not prohibitively expensive (or even cheap)
2. Established to be effective
3. Not prohibitively toxic, or suspected to be (or with no defined toxicity)

Vitamin C, Legal Considerations

Vitamin C is:

1. Remarkably inexpensive
2. Repeatedly established to be effective for 70+ years now in the medical literature and in medical clinics for multiple decades
3. Quite possibly the least toxic supplement or drug to ever be administered to patients without preexisting kidney disease

Vitamin C:

Practical Considerations

Regardless of whether there exists an appropriate antibiotic or other antimicrobial agent for administration, vitamin C should **always** be part of **any** protocol for **any** infection, acute or chronic, because:

1. Vitamin C significantly enhances immune function, in at least 20 different ways. (2002) Levy, *Curing the Incurable*, pp. 180-3
2. Vitamin C has its own direct anti-pathogen properties (iron, Fenton reaction)
3. Vitamin C neutralizes specific endotoxins, exotoxins, and the nonspecific pro-oxidant effects associated with any infection
4. All infections consume vitamin C, so failing to supplement with vitamin C means the patient will be dealing with infection-induced pre-scurvy and even frank scurvy as well (consider making **serial** plasma vitamin C levels a routine part of the testing in all hospitalized patients)