

*Discovery is seeing what everybody else has seen, and thinking what nobody else has thought.  
- Albert Szent-Gyorgi, discovered vitamin C in 1928*

# It's Vitamin C Week at

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## **Vitamin C: Its promise unrealized because of flawed research and public disinformation**

By Bill Sardi

Lost in the glitter and promise of tomorrow's medical cures are the lessons learned and taught concerning vitamin C. One of modern medicine's biggest wrong turns has been its spurning of vitamin C therapy. The public has grimly paid for a disease care system rather than a health promotion system centered on vitamin C and nutritional therapy.

The reason for even thinking of centering a health promotion program around a single vitamin is that humans are hopelessly flawed due to a genetic mutation that has impaired the internal production of vitamin C. Most other animal species synthesize their own vitamin C on demand as biological stress increases. The consequences of this mutation have been enormous. Some vitamin C researchers estimate humans would live up to 200 years in good health if they still produced vitamin C as their forefathers once did. If humans synthesized their own vitamin C the two leading causes of death, cancer and cardiovascular disease, would be reduced immensely. Recently researchers pooled the results of nine large studies and concluded that 700 milligrams of daily vitamin C, an amount only achieved through the use of

dietary supplements, would reduce the relative risk for coronary heart disease by 25 percent. [Am J Clinical Nutrition 80:1508-20, 2004]



There has been a long and bold legacy of vitamin C research conducted by pioneers outside of recognized research institutes. The discovery of vitamin C by **Albert Szent-Gyorgyi, M.D., Ph.D.** in 1928 was **recognized with a Nobel Prize.** According to Albert Szent-Gyorgyi: *"I always had the feeling that not enough use was made of it for supporting human health. The medical profession itself took a very narrow and very wrong view. Lack of ascorbic acid caused scurvy, so if there was no scurvy there was no lack of ascorbic acid. ...The only trouble was that scurvy is not a first symptom of a lack, but a final collapse, a pre-mortal syndrome and there is a very wide gap between scurvy and full health."*

Vitamin C runs counter to the *"one-patentable drug molecule treats a single-disease"* system now in place. Vitamin C has broad application to prevent or treat maladies ranging from cataracts, aneurysms, polio, artery disease, cancer, gall stones, high cholesterol and brain disease. **But it is being relegated to the minor role of preventing scurvy** (severe vitamin C deficiency) by virtue of misinformation provided to the public and what appears to be intentionally flawed science used to establish a spurious

Recommended Daily Allowance (RDA) for vitamin C intake.

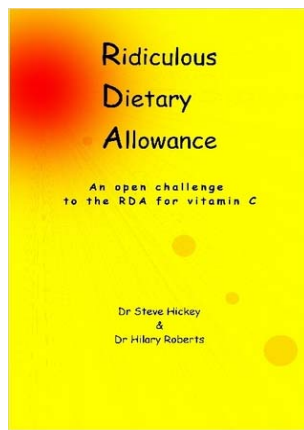


**Mark A Levine, MD**, a researcher at the Molecular and Clinical Nutrition Section, Digestive Diseases Branch, National Institute of Diabetes and Digestive and Kidney Diseases, National Institutes of Health, Bethesda, Maryland, **holds the unenviable distinction of being the sole researcher to misdirect the entire modern world in regards to needed vitamin C intake levels.**

Overlooking the half life of vitamin C, and designing a study that tested vitamin C concentrations many hours after consumption, Levine falsely concluded that vitamin C concentration above **70-85 micromole per liter** of blood serum cannot be achieved and the public is buying “*expensive urine*” when it consumes high-dose vitamin C since it is readily excreted in urine flow. [Biofactors 15:71-4, 2001] Levine’s research called for a limit of 200 milligrams of daily vitamin C. [Proceedings National Academy Science 93, 3704-3709, 1996] Amounts above that were alleged to be of worthless value.

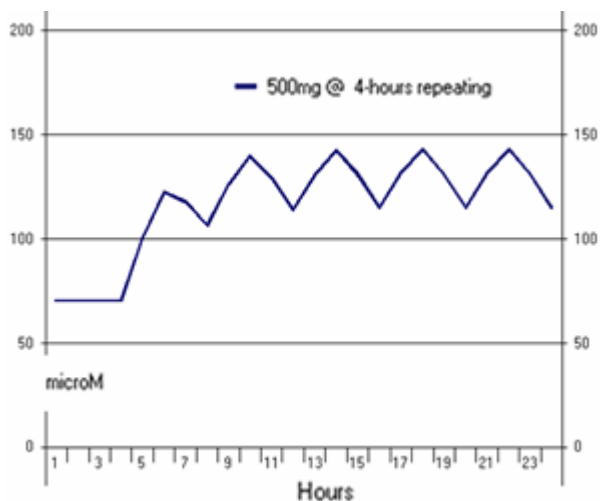
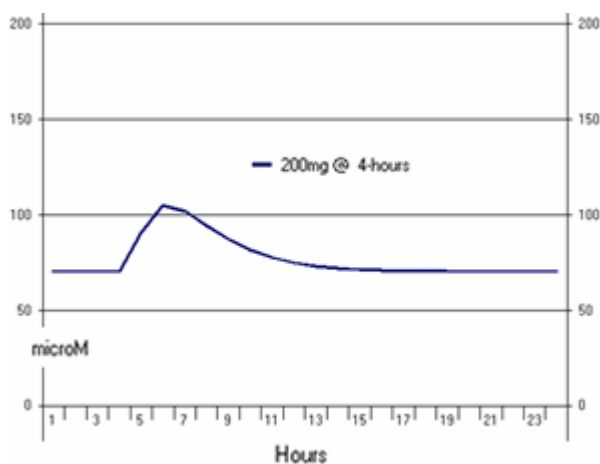
Embarrassingly, **Balz Frei, PhD**, director of the Linus Pauling Institute, agreed at the time, saying: “*The message is that large doses simply go to waste. Above a certain threshold, you urinate out most of what you take in.*” Frei’s statement almost ridicules Linus

Pauling who took 18,000 milligrams of vitamin C daily. The problem is, other published studies conducted prior to Levine’s research confirm that higher concentrations of vitamin C can be achieved, but were overlooked.



University of Manchester pharmacology graduates **Steve Hickey and Hilary Roberts** have attempted to correct this faulty science (Ascorbate: *The Science of Vitamin C* and *The Ridiculous Dietary Allowance* at [www.lulu.com](http://www.lulu.com)), but Levine has refused to issue retractions despite the fact a recent NIH-sponsored study, in which Levine was a co-investigator, conclusively showed that vitamin C concentrations can be achieved that are almost three times greater than previously thought possible (**220 micromole/liter**) via oral dosing. [Annals Internal Medicine 140:533-7, 2004] NIH websites and the Office of Dietary Supplements continue to cite misinformation, and the Food & Nutrition Board has ignored pleas to update the RDA for vitamin C.

Hickey and Roberts, working under a concept they call “*dynamic flow*,” suggest 500 mg of oral vitamin C taken 5 times daily will achieve near-optimal blood concentrations for healthy adults. More is required for adults facing challenges to their health.



Graphs provided by Steve Hickey PhD reveal how the blood concentration of oral vitamin C is rapidly depleted in 4 hours, but repeated 500 mg doses throughout the day maintains levels nearly double what NIH researchers claimed

## Studies contrary to NIH report

It is difficult to fathom how otherwise meticulous investigators working at the NIH and Linus Pauling Institute overlooked other scientific studies that ran contrary to their claim that high levels of vitamin C cannot be achieved through oral dosing. At least three studies, two of them conducted prior to the 1996 Levine 200 milligram limit, reveal a higher blood concentration can be achieved.

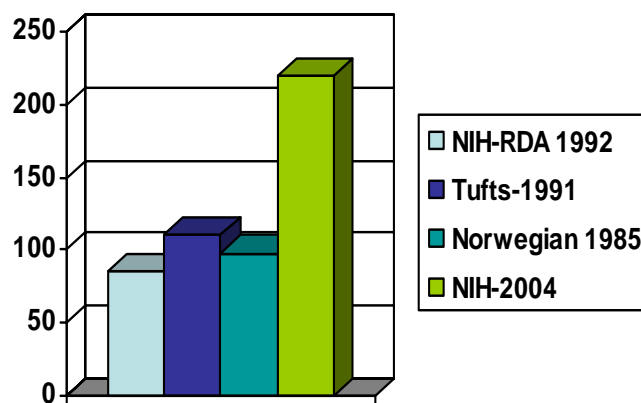
In 1991 researchers at Tufts University had examined vitamin C levels both in blood plasma and in aqueous fluid in the human eye. Ocular and plasma levels were measured in unsupplemented individuals who consumed 148 mg/day of vitamin C (mean intake), which is over two times the human Recommended Dietary Allowance (60 mg RDA), and then measured in supplemented individuals who consumed 2000 mg.

Mega-dose (2000 mg) supplementation significantly increased plasma, aqueous and lens ascorbic acid beyond what was produced by 148 mg dietary intake. This disproved Levine's paper setting a saturation dose at a mere 200 mg. After supplementation, concentration of total ascorbic acid in the aqueous fluid of the human eye was 24 times greater than that in blood plasma. The dietary intake of vitamin C in the unsupplemented group in this study was about 148 milligrams per day, approaching the 200 mg/day saturation point claimed by NIH researchers. Yet there was a "*rather dramatic*" rise in blood plasma concentration (83%) and aqueous fluid (32%) with mega-dose supplementation! Adults who took a 2000 mg/day vitamin C supplement achieved a concentration of 110 micromole per liter of blood plasma, which was considerably higher than what NIH researchers later said was the peak saturation level, about 70-85 micromole. The human eye is frequently bombarded by solar ultraviolet radiation and may need extra antioxidant protection provided by high levels of vitamin C. This study was published in 1991 but never referenced in the succeeding papers written and

published by NIH or other vitamin C researchers. [Current Eye Research 10:751-9, 1991]

Further investigation uncovered yet another telling report. In 1985 Norwegian researchers also examined blood plasma and eye aqueous levels. The oral consumption of 500 mg of vitamin C, taken twice a day with a 10-hour interval, produced blood serum concentrations of 98.9 micromole/liter, about 14 micromole beyond what NIH researchers said was possible. Aqueous vitamin C levels rose considerably with oral supplementation, but the Norwegian researchers noted there was a delay in the rise in the eye. It took 12 hours for the rise in vitamin C to occur in the aqueous fluid. A 50 mg oral dose of vitamin C did not raise aqueous levels in the eye whatsoever. This landmark study was published in 1985, seven years prior to the Levine/NIH report but again never referenced in subsequent papers. [Acta Ophthalmologica 63: 277-80, 1985]

Another study published in 1999 confirmed, in a static controlled environment, that 2000 mg of oral vitamin C in humans achieves peak saturation in the aqueous fluid of the human eye. (Higher doses used in this study, 3000 mg, 5000 mg, did not increase aqueous vitamin C concentration.) [Zhongguo Yao Li Xue Bao 20:879-83, 1999] This again disproves Levine's later published research papers that humans cannot benefit from oral doses of vitamin C beyond 200 mg per day.



Bars show peak blood concentration for vitamin C in micromole per liter of blood serum. Pale blue bar indicates peak concentration alleged in 1996 by NIH researchers (85 micromole). Other bars indicate peak blood concentrations from other studies. Obviously the claim that blood levels of vitamin C cannot rise above 85 micromole per liter of blood serum are false.

The public has been led astray, and public health authorities are unwilling to correct their errors regarding vitamin C supplementation. This has produced disastrous consequences, spiraling rates of cancer, Alzheimer's, cataracts, diabetes, coronary and artery disease, all preventable with guided vitamin C supplementation. Humanity cannot fathom that their pain, misery and early demise could be prevented or forestalled with a single vitamin.

The question of "*why hasn't my doctor told me this?*" is rooted in undeserved loyalty to physicians. Patients often are in no position to evaluate the claims made for vitamin C therapy. The blind cannot lead the blind, nor can a physician solely trained to prescribe man-made drugs adequately provide unbiased answers to his or her patients concerning mega-dose

ascorbic acid. Unfortunately, vitamin C is branded as “*alternative*” medicine and thrown into the heap of marginal therapies such as homeopathy, reflexology, iridology, and the like. Even the expected guardians of vitamin C therapy, such as the Linus Pauling Institute, have failed to exercise due diligence. The current state of affairs in regards to vitamin C will only change when the public ceases their blind loyalty to a failed health system.

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