

Claus Washington Jungeblut, M.D. Polio Pioneer: Ascorbate Advocate

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"Vitamin C can truthfully be designated as the antitoxic and antiviral vitamin."

—C.W. Jungeblut, M.D.

As if the Cuban missile crisis wasn't enough, I had even more to be worried about as a child of the 1960s. When all of us in first grade were told that we were to be vaccinated against polio, I for one didn't want to go near the school on that day. Regardless of my fear of needles, I had no choice in the matter. So, like all the rest of the kids, I braced up, got in line, and marched down the tiled hallway to meet my fate. When I got to the school nurse's office, I was astounded to be handed a lump of sugar with a drop of something soaking into it. I was told to eat it. I did. Then I was told I could go. Escape without a shot? What a fantastic turn of events. Life could begin anew.

In time, my classmates and I would all learn the name of our painless benefactor, Dr. Albert Sabin. With more time, I would find that his live oral vaccine had become the leading cause of polio in the US. What surprised me most was that the strongest criticism originated from the most eminent of sources: the other polio hero, Dr. Jonas Salk. On September 24, 1976, the Washington Post reported Dr. Salk's assertion that the Sabin live oral virus vaccine had been the "principal if not sole cause" of every reported polio case in the United States since 1961.¹ Salk repeated this accusation July 6, 1977, when he was interviewed on CBC television,² saying: "(W)e have known now since 1961 in the United States, and prior to that in other countries, that the live virus vaccine for polio does cause the disease itself."

In 1996, one year after Salk died, the US Centers for Disease Control began a turn-away from the oral live vaccine and recommended killed virus injections for the first two rounds of infant polio immunization. By 2000, CDC stated that "To eliminate the risk for vaccine-associated paralytic poliomyelitis, an all-Injected Polio Virus schedule is recommended for routine childhood vaccination in the United States."³ Thus only after two decades would orthodoxy at last take heed of the cautionary words of Dr. Salk, the man credited with creating the first polio vaccination.

From Fame to Ascorbate to Obscurity

Sabin and Salk had media visibility, a professional rivalry, and a personal animosity spanning decades. Everyone today knows their names. By contrast, the public and orthodox medicine are yet to pay proper attention to the work of Dr. Claus Jungeblut. In his *New York Times* obituary,⁴ we learn that Claus Washington Jungeblut received his M.D. from the University of Bern in 1921 and, between 1921 and 1923, conducted research at the Robert Koch Institute in Berlin. After employment as a bacteriologist for the New York State Department of Health from 1923 until 1927, he became Associate Professor at Stanford University from 1927 until 1929, when he joined the faculty at the Columbia University College of Physicians and Surgeons as Associate Professor of Bacteriology. Named a full professor in 1937, Jungeblut retired June 30, 1962. He died February 1, 1976, aged 78, at home in Westport, Connecticut.

In his day, Jungeblut was justly regarded as an important player in polio research. While recent revisionist history

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of the fight against polio has generally downplayed his contribution to the crusade, it has totally sidestepped what was arguably his most important discovery: that ascorbate is prevention and cure for polio. Amazingly, Jungebut first published this idea in 1935.⁵ His research on ascorbate was sweeping and profound, extending well beyond the topic of polio. In 1935, he also had shown that vitamin C inactivated diphtheria toxin.⁶ By 1937, Jungebut demonstrated that ascorbate inactivated tetanus toxin.⁷ John T. A. Ely, PhD, writes: "In the 1930s, the remarkable Claus W. Jungebut, M.D. first reported that ascorbic acid in concentrations, attainable in humans by a high intake, could inactivate and or protect against numerous viral and bacterial pathogens and their toxins. These include the polio, hepatitis and herpes viruses. One of (Jungebut's) earliest research findings was ascorbic acid's ability to neutralize and render harmless many bacterial toxins, such as tetanus, diphtheria, and staph toxins."⁸

Unlike oral polio vaccination, vitamin C has never caused polio. Yet how many people have you met, physicians included, who know vitamin C has been known to prevent and cure poliomyelitis for nearly 70 years? It was never really a secret. On September 18, 1939, *Time* magazine reported that "Last week, at the Manhattan meeting of the International Congress for Microbiology, two new clues turned up. (One is) Vitamin C."⁹ The article describes how Jungebut, while studying statistics of the 1938 Australian polio epidemic, deduced that low vitamin C status was associated with the disease.

After that, Jungebut is rarely highlighted by the popular or professional media. And, where he and his work are memorialized, there is no mention of ascorbate. The US National Library of Medicine has the broadest collection of his papers and laboratory data encom-

passing 42 years, 1922 to 1964. Oddly enough, the six boxes of documents are incongruously housed in NLM's Tropical Medicine Manuscript Collection.¹⁰ Perhaps the only flag for the nutritionally curious is a note that the contents description names Albert Szent-Gyorgyi among Jungebut's correspondents. Even at Columbia University, where he taught for 33 years (1929-1962), records are scanty. "We have very little on Claus W. Jungebut, which is odd considering how long he served on the faculty," said Stephen E. Novak, head of archives at the Columbia University Medical Center's Augustus C. Long Health Sciences Library.¹¹

Whatever Happened to Ascorbate Therapy for Polio?

When discussion about poliomyelitis turns towards megascorbate prophylaxis and treatment, there is no more frequent rejoinder than this: "If vitamin C therapy were so good, all doctors would be using it."

In his book *The Healing Factor*, Irwin Stone explains why they're not:

"The application of ascorbic acid in the treatment of poliomyelitis is an incredible story of high hopes that end in disappointment. And then, when a worker finally seemed to be on the right path and had demonstrated success, hardly anyone believed his results, which were systematically ignored. Within two years after the discovery of ascorbic acid, Jungebut showed that ascorbic acid would inactivate the virus of poliomyelitis. This was followed, in 1936-1937, in rapid succession by other workers showing similar inactivation of other viruses: by Holden et al., using the herpes virus; by Kligler and Bernkopf, on the vaccina virus, by Lagenbusch and Enderling, with the virus of hoof-and-mouth disease; by Amato, on the rabies virus; by Lominski, using bacteriophage; and by Lojkin and Martin, with the tobacco mosaic disease virus. Thus, at this early date it was established that

ascorbic acid had the potential of being a wide-spectrum antiviral agent. Here was a new “magic bullet” that was effective against a wide variety of viruses and was known to be completely harmless. . . (T)his work was being carried out in the pre-Salk days. Then, all a doctor could do in a polio case was apply symptomatic relief and hope for the best. An epidemic could run its course without much interference from medicine and an effective, harmless virucide would have been a priceless commodity. Jungeblut continued his work and published a series of papers from 1936 to 1939 in which he showed that the administration of ascorbic acid to monkeys infected with poliomyelitis produced a distinct reduction in the severity of the disease and enhanced their resistance to it. Sabin, attempting to reproduce Jungeblut’s work on monkeys, failed to obtain these partially successful results. In further efforts to explain their variable clinical results, both scientists got bogged down chasing the technical details of the tests. It may be easy for us to look back now and say that the size and the frequency of the dosages were insufficient to maintain high levels of ascorbic acid in the blood during the incubation of the disease. The upshot was that the negative findings of Sabin effectively stifled further research in this field for a decade. In his 1952 paper, Frederick R. Klenner, M.D., comments on Jungeblut’s earlier work, stating that his results were indecisive because the amount of vitamin C given was inadequate to cope with the degree of infection. Sabin’s results were not as suggestive as Jungeblut’s because he, Sabin, used a greater dose of virus and less vitamin C. If high blood and tissue levels of ascorbic acid are continuously maintained, an extremely unfavorable environment for viral growth and reproduction is created in the human body.”¹²

Robert Landwehr adds: “(S)ince 1939 polio experts were quite certain

that vitamin C was not effective against polio. There seemed little doubt that Dr. Albert B. Sabin, a highly respected figure in medical research even before he developed his successful vaccines, had demonstrated that vitamin C had no value in combating polio viruses. In 1939 he published a paper showing that vitamin C had no effect in preventing paralysis in rhesus monkeys experimentally infected with a strain of polio virus. He had tried to corroborate the work of Dr. Claus W. Jungeblut, another highly respected medical researcher, who had published in 1935 and 1937 papers indicating that vitamin C might be of benefit. Sabin could not reproduce Jungeblut’s results even though he consulted Jungeblut during the course of the experiments. It seemed to be a fair trial, and Sabin’s negative results virtually ended experiments with vitamin C and polio.”¹³

Klenner said that there was a simple reason for Sabin’s well-reported failures: the dosage was far too low. He writes¹⁴:

“From a review of the literature one can safely state that in all instances of experimental work with ascorbic acid on the virus organism, in experimental animals, the amount of virus used was far beyond the range of the administered dose of this vitamin. Jungeblut (in 1937) stated that the parenteral administration of natural vitamin C during the incubation period of poliomyelitis in monkeys is always followed by a distinct change in the severity of the disease; that after the fifth day of the disease larger doses are required. One of the most unfortunate mistakes in all of the research on poliomyelitis was Sabin’s unscientific attempt to confirm Jungeblut’s work with vitamin C against the polio virus in monkeys. Jungeblut, in infecting his rhesus monkeys, used the mild “droplet method” and then administered vitamin C by needle in varying amounts up 400 mg/day. . . (Even) with almost infinitesimal amounts, as we at

present recognize, he was able to demonstrate in one series that the non-paralytic survivors was six times as great as in the controls. On the other hand, Sabin, in infecting his monkeys did not follow the procedure given by Jungeblut whose experiments he was attempting to repeat, but instead employed a more forceful method of inoculation which obviously resulted in sickness of maximum severity. Sabin further refused to follow Jungeblut's suggestion as to the dose of vitamin C to be used. By Sabin's actual report the amount given was rarely more than 35 per cent of that used by his associate. (In 1939) Sabin makes this significant statement: 'One monkey was given 400 mg of vitamin C for one day at the suggestion of Jungeblut who felt that large doses was necessary to effect a change in the course of the disease.' Yet on the basis of Sabin's work the negative value of vitamin C in the treatment of virus diseases has been for years accepted as final."

Klenner, who published several papers discussing his success using megadoses of ascorbate with polio patients, administered many thousands of milligrams of ascorbate daily. This dosage is enormously different from Sabin's low doses, normally only one-third of Jungeblut's. Furthermore, Sabin gave one and only one single "large dose" of 400 mg, to only one animal, and for only one day. Sadly, adds Klenner, "Sabin's negative report on the value of ascorbic acid on the poliomyelitis virus stopped Jungeblut's work."¹⁵ Fortunately, it did not stop Klenner, who piloted megascorbate therapy for his patients during the 1948 polio epidemic. "For patients treated in the home," writes Klenner, "the dose schedule was 2,000 mg by needle every six hours, supplemented by 1,000 to 2,000 mg every two hours by mouth." That is a total of 8,000 mg/day intramuscularly, plus, allowing for sleep, oral doses in the range of an additional 16,000 to 32,000 mg. This yields a total

between 20,000 and 40,000 mg of vitamin C per day.

Curiously, the only report on vitamin C and polio that Klenner had at that time read was Sabin's negative one. Klenner writes that his own "observations of the action of ascorbic acid on virus diseases were made independently of any knowledge of previous studies using vitamin C on virus pathology, except for the negative report of Sabin after treating Rhesus monkeys experimentally infected with the poliomyelitis virus." Then he reviewed the literature, finding "an almost unbelievable record of such studies. The years of labor in animal experimentation, the cost in human effort and in grants, and the volumes written, make it difficult to understand how so many investigators could have failed in comprehending the one thing that would have given positive results a decade ago. This one thing was the size of the dose of vitamin C employed and the frequency of its administration. In all fairness it must be said that Jungeblut noted on several occasions that he attributed his failure of results to the possibility that the strength of his injectable "C" was inadequate. It was he who unequivocally said that "vitamin C can truthfully be designated as the antitoxic and antiviral vitamin."¹⁵

In 1935, nylon was created and the discovery of the neutron won the Nobel. The Gallup poll was begun, and Errol Flynn had his first movie starring role in *Captain Blood*. At this time, the year the DC-3 first went into service, when a first-class postage stamp cost 3 cents, Claus W. Jungeblut was the first scientist to proclaim that ascorbate was antiviral. All that remained was to use enough of it.

In the late 1970s, as a young father, and long before I had ever heard of Dr. Jungeblut, I was earnestly applying megadoses of ascorbate due to what I'd read by Irwin Stone and Frederick Klenner. Their papers, written standing solidly upon

Jungeblut's shoulders, were the primary reason I was able to raise healthy children without Salk shots or Sabin sugar cubes. But, my kids certainly took a lot of vitamin C. From seven decades past, Claus W. Jungeblut has directly influenced the course of every orthomolecular practitioner, and earned the thanks of every patient whose health, and life, have been saved by ascorbate therapy.

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Note

Of Dr. Jungeblut's many research reports, 22 were published in the *Journal of Experimental Medicine*. They are archived and available for free online access at <http://www.jem.org/contents-by-date.0.shtml> Key papers regarding ascorbate include:

- Jungeblut CW: Inactivation of poliomyelitis virus in vitro by crystalline vitamin C (ascorbic acid). *J Exper Med*, 1935; Oct/62: 517-521
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