Los Angeles Times

Vitamin C as cancer treatment? High doses boost chemotherapy in study

By Monte Morin February 5, 2014, 12:18 p.m.

TODAY'S HEADLINE NEWS

Vitamin C versus cancer revisited

Vitamin C may boost cancer drugs

- Could pumping roughly 2,000 oranges' worth of vitamin C into a patient's bloodstream boost the effectiveness of anti-cancer drugs and mitigate the grueling side effects of chemotherapy?

- Very high doses of vitamin C boosted the effectiveness of chemotherapy in mice and helped human patients tolerate their treatment, according to a new study. (Karen Tapia-Andersen)

- "There's been a bias since the late 1970s that vitamin C cancer treatment is worthless and a waste of time," said Dr. Jeanne Drisko, a study co-author and the director of integrative medicine at the University of Kansas Medical Center. "We're overcoming that old bias."

- The furor surrounding vitamin C began with the chemist Linus Pauling, a two-time winner of the Nobel Prize, who proposed that heavy doses of ascorbate could prevent and treat most cancers. Although Pauling's broad claims could not be supported in clinical trials, large doses of vitamin C are still used as an alternative form of cancer treatment for thousands of patients, outside of mainstream medicine.

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Promising cancer therapy treatment: Vitamin C

New research suggests that vitamin C might make cancer drugs more effective. But past discredited claims about the vitamin's effectiveness in treating cancer are likely to hinder further study.

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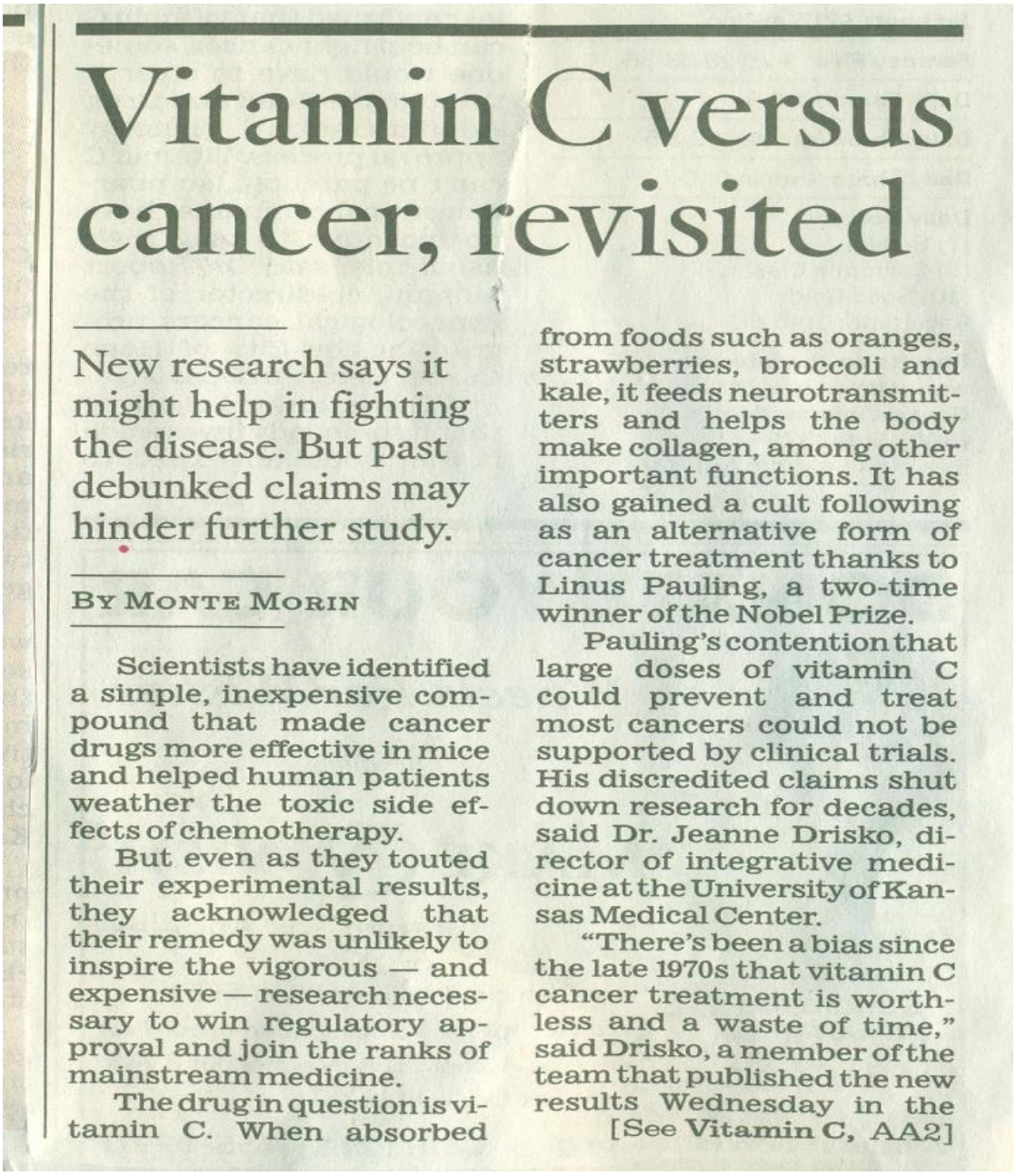

Vitamin C versus cancer, revisited

New research says it might help in fighting the disease. But past debunked claims may hinder further study.

BY MONTE MORIN

Scientists have identified a simple, inexpensive compound that made cancer drugs more effective in mice and helped human patients weather the toxic side effects of chemotherapy.

But even as they touted their experimental results, they acknowledged that their remedy was unlikely to inspire the vigorous — and expensive — research necessary to win regulatory approval and join the ranks of mainstream medicine.

The drug in question is vitamin C. When absorbed from foods such as oranges, strawberries, broccoli and kale, it feeds neurotransmitters and helps the body make collagen, among other important functions. It has also gained a cult following as an alternative form of cancer treatment thanks to Linus Pauling, a two-time winner of the Nobel Prize.

Pauling's contention that large doses of vitamin C could prevent and treat most cancers could not be supported by clinical trials. His discredited claims shut down research for decades, said Dr. Jeanne Drisko, director of integrative medicine at the University of Kansas Medical Center.

"There's been a bias since the late 1970s that vitamin C cancer treatment is worthless and a waste of time," said Drisko, a member of the team that published the new results Wednesday in the

[See Vitamin C, AA2]

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[**Vitamin C,** from AA1] journal Science Translational Medicine. Now, she said, "we're overcoming that old bias."

But that's only part of the problem. Even if more studies confirmed that vitamin C can help fight cancer, someone would have to steer it through the Food and Drug Administration's lengthy approval process. Vitamin C can't be patented, so pharmaceutical companies have no incentive to play their usual role, said Dr. Robert Morgan, co-director of the gynecological cancers program at the City of Hope Cancer Center in Duarte.

"This is the kind of a drug that if somebody invested in it, they would not expect to make back their investment," said Morgan, who wasn't involved in the new research. "That's the issue."

At the same time, Morgan and other experts agreed that the benefits reported by Drisko and her colleagues warranted further study.

"There's certainly very clear indicators coming out of this work that further investigation is warranted," said Dr. Jeffrey White, director of the Office of Cancer Complementary and Alternative Medicine at the National Cancer Institute.

In the new experiments, researchers examined the effects of vitamin C, also known as ascorbate, on a variety of cancer cells in the lab and in ovarian cancer cells in mice. When high concentrations entered the space between cells, it formed hydrogen peroxide.

That chemical went to work on cancerous cells in several ways: It damaged their DNA, it stressed their metabolism and inhibited their growth, said study senior author Qi Chen, a biochemist at the University of Kansas.

This weakening improved the effectiveness of traditional cancer drugs such as carboplatin and paclitaxel, according to the study.

Surprisingly, the hydrogen peroxide did not harm the noncancerous cells, the researchers found. It's not clear why the healthy cells were spared, but the researchers said they suspected it had to do with the inefficient way cancer cells convert glucose to energy when compared with regular cells.

"Ascorbate causes an energy crisis for the cancer cells," Chen said.

A third part of the study involved a small trial of 27 patients with advanced ovarian cancer. Some of them were given vitamin C with chemotherapy, at doses of 75 to 105 grams depending on their body weight. (An orange contains about 50 milligrams of vitamin C.)

The purpose of the trial was to see whether the vitamin C sickened patients, not whether it was more effective than standard treatment. So the researchers were surprised to find that that the patients on vitamin C had more energy, experienced less nausea and generally tolerated chemotherapy better than those who did not receive it.

"We did not expect to find that," Drisko said.

In earlier studies, patients were given vitamin C in pill form, and most of it was excreted before it had a chance to be metabolized and delivered into the bloodstream, Drisko said. In the new experiments, researchers bypassed that problem by injecting the vitamin into the veins. That's important because the dose given to mice was extremely high — the equivalent of giving human patients the vitamin C of about 2,000 oranges.

In an article that accompanied the study, two cancer experts who were not involved in the research wrote that new drug combinations were badly needed in the fight against cancer, and that the "cocktail" of chemotherapy and vitamin C showed promise.

The findings "strongly suggest that the time has come to test ascorbate combination therapy," wrote Melanie McConnell and Patries Herst, researchers in Wellington, New Zealand.

Though Drisko said she hoped government agencies would step in to fund larger trials, she suspected the National Institutes of Health would avoid offering grants given vitamin C's controversial history.

White, of the NIH's National Cancer Institute, complimented the study for explaining how vitamin C affects cancer cells. But he also acknowledged that some grant reviewers might view the subject with bias.

"There are certain things that carry with them a certain stigma, at least in the minds of some people who are involved with medicine and cancer research," White said. "Research like this ought to carry the day."

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GoWild-Gubinge aka Kakadu Plum

GoWild AUSTRALIA

naturally wild !

100% Whole Fruit Powders and Fluid Extracts

GoWild Australia only uses the freshly harvested and freeze-dried pulp, never the kernel

The World's Richest Source of Natural Vitamin C (Stable)

Our GoWild-Gubinge fruit aka Kakadu Plum is the world's richest natural plant source of Vitamin C and Ellagic Acid. It contains over 7000 mg of vitamin C per 100 g of fresh fruit - over 100 times the concentration found in oranges

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