

Cancer a nobel prize winner in collaboration



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Cancer treatments such as chemotherapy or radiation therapy can be detrimental on the patient due to their high cost, ineffectiveness or side effects. However, multiple studies have been conducted and researchers are coming to the conclusion that there might be a way to enhance and make these treatments work better. These studies are testing the benefits of high dose of intravenous vitamin C when given in combination with standard treatment and how it affects patients' overall health. High dose vitamin C has been a controversial topic in cancer treatment since the 1970s.

Physicians have tried using vitamin C also known as ascorbate or ascorbic acid for years, but it has had conflicting results in trials.

It all began when Linus Pauling a Nobel Prize winner in collaboration with Ewan Cameron a surgeon at the time, came to the conclusion that high dose of vitamin C (typically 10g/day by intravenous infusion for about 10 days and orally afterwards) improved the average survival of advanced cancer patients and for a small group of patients, survival was increased to up to 20 times longer than that of controls (2, 3). Despite Pauling's findings, the Mayo Clinic disagreed with these findings concluding that high dose of Vitamin C when given orally was not effective when compared to a placebo in treating cancer (5, 6). Facing these controversial findings, due to a growing need for more effective cancer treatments, high dose intravenous vitamin C is becoming part of more thorough studies. Scientists and oncologists are conducting more studies to determine if high dose intravenous vitamin C can become part of cancer treatment regimen. Vitamin C works as both a cofactor in the body and an antioxidant.

Vitamin C stimulates collagen formation, increases production of hydrogen peroxide production, inhibits angiogenesis and enhances and strengthens the immune system. Due to a higher level of oxidative stress inside the cancer cells' mitochondria, these cells can lead to production of redox active iron molecules. When these molecules react with vitamin C, hydrogen peroxide is formed as well as hydrogen peroxide-derived free radicals.

It is believed that these free radicals cause cancer cell death by damaging the cells' DNA. Vitamin C damages cancer cells that are under a high level of stress, and since normal healthy cells don't have the same level of stress, vitamin C does not have the same toxic effect. Overall, vitamin C has reported to have the lowest toxicity of all vitamins. Most common side effects are diarrhea, dry mouth, and gas. (1, 4). In conclusion, intravenous vitamin C has shown to improve the quality of life of cancer patients, improve response to radiation therapy, lessen the side effects of chemotherapy as well as reduce inflammation (7).

Much more studies are needed, however if Vitamin C proves to be effective in future clinical trials, the new cancer treatment might be more cost effective compared to the chemotherapeutic agents in use