

INTRAVENOUS VITAMIN C

WHAT IS VITAMIN C ?

Vitamin C is an antioxidant, of which humans lack the ability to make in their bodies as compared to most other mammals. So we need to obtain vitamin C from our diets on a daily basis. An antioxidant is a substance which quenches free radicals being produced in the body. Free radicals are electrons which causes damage at a cellular level. Vitamin C is a water soluble vitamin and has numerous roles including helping form collagen, neurotransmitters, and helping to boost the immune system and protect against heart disease.

WHAT IS THE DIFFERENCE OF USING VITAMIN C AS INTRAVENOUS APPLICATION TO AN ORAL SUPPLEMENT?

Vitamin C used as an oral supplement has a limitation in the rate and amount absorbed through the gut wall. The maximum that can be absorbed at any one time is around 800mg, any more than this and the vitamin C will be just excreted. At this low dose vitamin C acts as an antioxidant and has a short half life in the body, hence why we need vitamin C on a daily basis.

To obtain higher dosages of oral vitamin C in the body the supplementation must be split during the day at no more than 1g each time to ensure optimal absorption and minimal wastage. When administering vitamin C through intravenously we can input much higher dosages of the vitamin into the body. At dosages higher than 10g the nature of the vitamin C changes. Studies have shown increased survival times and quality of life of terminal cancer patients.

Compared to oral vitamin C , Intravenous (IV) vitamin C results in 30-60 times higher plasma levels. At higher dosages of 10g++ per IV, vitamin C acts a pro-oxidant, and it generates higher levels of hydrogen peroxide which is natural oxidising agent in the body. Hydrogen peroxide is selectively toxic to cancer cells, because cancer cells do not have the protective mechanisms to reduce hydrogen peroxide inside their cells. The increased free radicals causes DNA damage to cancer cells which increases cell death. Normal cells have the ability to neutralize hydrogen peroxide due to the presence of the catalase enzyme which breaks down the hydrogen peroxide into oxygen and water.

As an adjunctive therapy, IV vitamin C has been shown to sensitize cancer cells to chemotherapy and radiation, due to the increased oxidative damage to the DNA by vitamin C. Research presented in Cancer Cell March 2017, demonstrated that on cancer patients who received high dose vitamin C combined with conventional treatment increased their survival time increased by an extra 50-70%.

IS VITAMIN C SAFE AT VERY HIGH DOSAGES?

Yes, however there are some mild side effects at higher dosages of vitamin C. These can include nausea, dry mouth, stinging in the vein (as vitamin C is acidic) and more frequent trips to the bathroom, but these symptoms are temporary.

WHAT ARE CLINICAL STUDIES SHOWING ITS EFFECTIVENESS AGAINST CANCER?

Studies are currently ongoing, but the case evidence is mounting that by using IV vitamin C selectively with other nutrients and IV compounds, it is safe. Studies are listed below:

- *Anti-cancer research Journal Mar 2009 – A review of high dose vitamin C as an anti-cancer protocol*
<https://www.ncbi.nlm.nih.gov/pubmed/19414313>
- *Chemico-biological reactions journal 1975 sarcoma study*
<https://www.ncbi.nlm.nih.gov/pubmed/1104207>
- *Journal of Korean Medical Science 2007*
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2693571/>
- *Science translational Medicine 2014 – High dose vitamin C and enhanced chemo-sensitivity of ovarian cancer and reduced toxicity of chemotherapy.*
<https://www.ncbi.nlm.nih.gov/pubmed/24500406>
- *Yonsei Medical Journal 2015 – High dose vitamin C promotes regression of multiple metastases originating from Liver cancer.*
<https://www.ncbi.nlm.nih.gov/pubmed/26256994>

HOW BEST TO OBTAIN THE BEST EFFECT OF IV VITAMIN C IN THE BODY?

Firstly it is strongly recommended to consider a laboratory analysis of your cancer cells, to determine their sensitivity to a range of natural agents. Not all cancers are responsive to vitamin C therapy.

Secondly, to amplify the effects of vitamin as an oxidizing agent it is important to consider taking additional IV Artesunate which is also an oxidizing agent to cancer cells. As it is an oxidizing therapy, it is important to reduce antioxidant intake of supplements within a 12 hours period of receiving IV vitamin C, as this will nullify the effects of the vitamin C during that time.