

Important Roles of Vitamin C...

excerpts from articles at LivOnLabs.com...

Many people assume Vitamin C is only required in tiny amounts; just enough to prevent scurvy. After all, this Vitamin C-deficiency disease spawned the chemical name ascorbate for Vitamin C. Ascorbate literally means “against scurvy.” Were this its only function, tiny amounts of Vitamin C would be sufficient for most people on the planet. But, there’s vastly more it can do. Vitamin C is required in many essential metabolic processes – two of which we have highlighted below: Collagen Synthesis and Calcium Incorporation.

Collagen Synthesis...

Vitamin C is essential for the synthesis and maintenance of collagen, the most abundant protein in the human body. Collagen comprises about 25% to 35% of the total protein content in the body. Its strong, connective, elongated fibrils are found in skin, ligaments, tendons, cartilage, bone, blood vessels, the intestines, and the discs between spinal vertebrae. It is also found in the cornea and in muscle tissue.

Vitamin C helps protect the skin by promoting the production and migration of fibroblasts that support normal wound healing.

VitaminC protects against skin wrinkles seen in premature aging.

Increased VitaminC uptake by vascular smooth muscle cells increases the synthesis and maturation of Type I (aka Type 1) collagen. Type I collagen accounts for about 90% of the body’s total collagen content.

High concentrations of VitaminC stimulate synthesis of Type IV collagen, which has important filtration characteristics in the kidney, the blood-brain barrier, and the arterial lining.

Promotes Calcium Incorporation into Bone Tissue...

The formation and maintenance of quality, high-density bone material requires Vitamin C. Vitamin C promotes assimilation of calcium into the bone, protects against leaching of calcium out of the bones, and fights the oxidative stress that works against assimilation.

Vitamin C stimulates the formation of the cells that incorporate calcium into bone tissue (osteoblasts).

VitaminC inhibits the development of cells that dissolve calcium out of bone tissues (osteoclasts).

As a powerful antioxidant, VitaminC fights oxidative stress in bone tissues.

Collagen cross-linking, required to form the dense matrix for optimal bone strength, requires Vitamin C.

Vitamin C is essential to numerous functions inside the body. We’ve just outlined two more reasons to get your daily dose!

17 Ways Vitamin C Supports a Healthy Immune System...

The power of vitamin C is often attributed to its role as an antioxidant. However, no other antioxidant can perform the many additional physiological and biological roles that vitamin C fills. To think of vitamin C as nothing more than an antioxidant would be a great understatement. Among its many positive effects on the body, vitamin C is a strong supporter of healthy immune function. Here’s how:

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Vitamin C supports the production of interferons. Interferons are produced when the presence of pathogens is detected. They facilitate the ability of cells to launch protective cellular defenses.*

Vitamin C enhances the function of phagocytes. Phagocytes are a type of white blood cell that envelop pathogens and other dangerous particles. Once the invaders are captured in this manner, they are enzymatically digested.*

Vitamin C supports the cell-mediated immune response. There are 2 major ways that the body can respond to a pathogen: antibody-mediated immunity and cell-mediated immunity. Cell-mediated response refers to the activation of macrophages, natural killer cells, and antigen-specific T-lymphocytes that attack anything perceived as a foreign agent.*

Vitamin C neutralizes oxidative stress.*

Vitamin C improves and enhances the immune response achieved with vaccination.*

Vitamin C enhances cytokine production by white blood cells. Cytokines are communication proteins released by certain white blood cells that transmit information to other cells, promoting the immune response.*

Vitamin C inhibits various forms of T-lymphocyte death. T-lymphocytes are a type of white blood cell. They are an integral part of the cell-mediated immune defense system. Vitamin C helps to keep these important cells alive and viable.

Vitamin C enhances nitric oxide production by phagocytes. Phagocytes, as discussed in #2, are white blood cells that engulf invading microorganisms. Nitric oxide is produced in large amounts in these cells, and it is one of the agents that will kill captured pathogens.*

Vitamin C enhances T-lymphocyte production. As mentioned in #7, these cells are essential to cell-mediated immune responses, and Vitamin C helps them to multiply in number.*

Vitamin C enhances B-lymphocyte production. These white blood cells make antibodies as part of the antibody-mediated immune response. Antibodies are formed in reaction to the initial introduction of an invading pathogen or antigen.*

Vitamin C inhibits neuraminidase production. Some pathogenic viruses and bacteria create neuraminidase, an enzyme that keeps them from being trapped in mucus, one of the body's natural lines of defense. Inhibiting neuraminidase helps the body optimize this defensive mechanism.*

Vitamin C supports antibody production and activity. Good antibody function is important to a healthy immune system.*

Vitamin C supports natural killer cell activity. Natural killer cells are lymphocytes that can directly attack cells, like tumor cells, and kill them.*

Vitamin C supports localized generation and interaction with hydrogen peroxide. Vitamin C and hydrogen peroxide can kill microorganisms and can dissolve the protective capsules of some bacteria, such as pneumococci.*

Vitamin C enhances cyclic GMP levels in lymphocytes. Cyclic GMP plays a central role in the regulation of many physiologic responses, including the modulation of immune responses. Cyclic GMP is important for normal cell proliferation and differentiation. It also controls the action of many hormones, and it appears to mediate the relaxation of smooth muscle.*

Vitamin C detoxifies histamine. This effect is important in the support of local immune factors.*

Vitamin C enhances the mucolytic effect. This property helps liquefy thick secretions, increasing immune access to infection.*

Vitamin C makes bacterial membranes more permeable to some antibiotics.*

Vitamin C enhances prostaglandin formation. Prostaglandins are hormone-like compounds that control many physiologic processes, including regulating T-lymphocyte function.*

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Vitamin C concentrates in white blood cells. Some of the primary cells in the immune system concentrate Vitamin C as much as 80 times higher than the level in plasma. This assures extra delivery of Vitamin C to the sites of infection by the migration of these Vitamin C-rich white blood cells.*

Why Buy IV Vitamin C?

Since the 1940s, intravenous (IV) infusions and injections of vitamin C have been considered the gold standard of vitamin C delivery for one reason: IV delivery puts 100% of the vitamin C directly into the blood. This direct delivery method certainly offers an advantage over most oral delivery systems of vitamin C, but what really matters is the bioavailability of IV vitamin C. Although many doctors believe 100% delivery into the blood is the same as 100% bioavailability, this is not always true.

The True Meaning of Bioavailability...

Bioavailability indicates the amount of a substance that is absorbed by a target location within the body. This target location can be anywhere in the body... blood, cells, tissue, etc. For many drugs and nutrients, the target location is the blood. IV delivery does offer 100% bioavailability when blood is the target. However, for vitamin C, the target location is typically inside the cell – where free radicals, toxins, and pathogens do the most harm. While IV delivery puts 100% of the vitamin C directly into the blood, it does not guarantee 100% absorption into the cells. IV vitamin C relies on the body's active transport system to carry the vitamin C into the cells. This system uses transport proteins, called sodium-dependent vitamin C co-transporters (SVCTs), to carry vitamin C through special portals that lead to the inside of cells. The challenge with SVCTs is that they can only carry one molecule of vitamin C through one portal at a time, and the number of SVCTs and portals is limited. This means absorption of vitamin C into the cells (or, its bioavailability), may be severely restricted if there are not enough SVCTs or open portals available.

IV Vitamin C: The Ultimate Consumer...

It's also important to understand that for vitamin C to benefit the health of the cell, it must be in its active (reduced) form. If the vitamin C has been rendered inactive (oxidized) during transport, it has lost the electrons it needs to function properly. The good news is that inactive vitamin C can become active again; the bad news is that it must take electrons from other antioxidants within the cell (i.e. glutathione) to do this. This isn't such a bad thing if you have tons of antioxidants just hanging out inside your cells, but this is not usually the case for anyone over the age of 25, or anyone with ill health. Let's assume that a majority of the IV vitamin C makes it into the cells, and there are plenty of antioxidants on-hand to ensure the vitamin C stays active within the cells. Mission accomplished, right? Well, sort of. The entire process of transporting vitamin C into the cells and reactivating inactive vitamin C consumes A LOT of valuable energy within the cell. Since an ample supply of cellular energy is necessary to stay alive, the energy used in this process needs to be replaced as quickly as possible.

So what do vitamin C experts recommend when you need high-doses of vitamin C delivered into the blood and the cells? Two things: IV vitamin C (if available) and liposome encapsulated vitamin C.

Liposome Encapsulated Vitamin C...

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Liposomes are tiny spheres made from Essential Phospholipids. They form a double-layer membrane around active vitamin C, and protect it from destruction in the digestive system. Because the liposome membrane is made of phospholipids – the same material that makes up the cellular membrane – the liposome is able to bypass the body's active transport system (those SVCTs and portals we mentioned earlier) and incorporate itself directly into the cell membrane. When this happens, the vitamin C that's inside of the liposome is delivered directly into the cell in its active state (it has all of its electrons), and without using a lot of cellular energy. Since IV vitamin C offers 100% delivery directly into the blood, and liposome encapsulated vitamin C offers superior, energy-efficient delivery into the cells, they can work together to optimize the level of vitamin C in the body. If IV vitamin C is not an option for you, not to worry, high doses of liposome encapsulated vitamin C can offer significant benefits by itself. "A much smaller oral dose of liposome encapsulated vitamin C (5 to 10 grams) often results in a clearly superior clinical response than a much larger dose of vitamin C given intravenously (25 to 100 grams)," says Dr. Thomas Levy in *Curing the Incurable: Vitamin C, Infectious Diseases, and Toxins*.

Can Vitamin C Upset Your Stomach?

Vitamin C is well known for providing many benefits, including shortening the duration of a cold, boosting the immune system and supporting the natural production of collagen. But yes, taking high doses of traditional vitamin C – pills, powders, and capsules – can upset your stomach and then some...Here's why...Most traditional vitamin C supplements contain straight ascorbic acid. Ascorbic acid is recognized as the primary force behind the power of vitamin C, but it is an acid. A moderate amount of acid in the gastric system helps to digest food and kill bacteria, but too much acid leads to heartburn, bloating, belching, and flatulence. High quality vitamin C supplements use gentler, less-acidic types of vitamin C to help prevent this gastric upset. These supplements typically include sodium ascorbate, ascorbic acid with bioflavonoids, ascorbyl palmitate, calcium ascorbate, or mineral forms of ascorbate. The type of vitamin C you take, however, is only one part of the issue. Because no matter what type of vitamin C you ingest, it's primarily absorbed through an active transport system (unless it's encapsulated in liposomes, but we'll get to that later).

Active transport of vitamin C relies on sodium-dependent vitamin C co-transporters (SVCTs) to carry each vitamin C molecule through special doorways into the bloodstream, cell or tissue. SVCTs can only carry one molecule of vitamin C through one door at a time. This system works efficiently for a healthy person taking small doses of vitamin C, but when you take high doses of vitamin C, the absorption is severely restricted by the number of SVCTs and the number of open doors. If there aren't enough SVCTs to carry all of the vitamin C into the blood, or all of the doors are closed, the vitamin C that was not absorbed is forced to exit the body. This forced exit occurs because the most common forms of vitamin C are water soluble – meaning the vitamin C dissolves in water, and cannot be stored by the body for later use. So when a large dose of water soluble vitamin C is taken and there are not enough SVCTs or open doors, all of the unabsorbed vitamin C is sent to the colon. Water is then drawn into the colon in order to dilute and excrete the vitamin C. Then... straight to the bathroom.

Unless you are looking for a good cleanse, there are two ways to prevent these unpleasant experiences when taking high doses of vitamin C:

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Take single doses of 500 mg of sodium ascorbate, several times a day. Sodium ascorbate is recommended most by vitamin C experts, and it is commonly used in high dose intravenous (IV) infusions.

Take vitamin C encapsulated in liposomes. Liposomes are tiny spheres that form a protective membrane around the vitamin C. This prevents the vitamin C from being destroyed in the digestive system, while promoting delivery directly into the bloodstream and cells. And because liposomes do not use the body's active transport system, you can take high doses of liposomal vitamin C without worrying about where to find the nearest bathroom.

Final Notes: some excerpts from Dr. Thomas Levy at peakenergy.com...

Vitamin C is truly Nature's gift to health and healing. Virtually all medical conditions are associated with increased oxidative stress, and the relief, or at least partial relief, of this oxidative stress with the vigorous administration of vitamin C and other quality antioxidants, will always help. The oxidative stress caused by disease and environmental toxins can deplete the body's level of vitamin C and other antioxidants. In serious illness, the body's reserve of vitamin C goes to zero because the rate at which the body regenerates it is far lower than the rate of depletion. This can require huge doses to bring it back to normal. Even if you are taking antibiotics or other prescription medicines, bringing your levels of vitamin C in your body back to normal, or temporarily supranormal, will virtually always result in profound benefits. The treatment is effective and, compared to the expense of conventional treatment, it is inexpensive. Few medicines and therapeutic interventions are more affordable than, and as non-toxic as, vitamin C. Even though something as extraordinarily beneficial as vitamin C might seem too good to be true, that's definitely not the case.

PS from FactorReady.com: You'll find an abundance of Vitamin C information at Dr. Thomas Levy's web site at PeakEnergy.com and Dr. Andrew Saul's site at DoctorYourself.com Both these knowledgeable gentlemen advocate Vitamin C usage, including mega-doses for various illnesses and diseases. Dr. Saul in fact says "Vitamin C has been known to cure over 30 major diseases for over 50 years." He often says, "Take Enough C To Be Symptom Free, Whatever That Amount Might Be." As stated under the above Final Notes from Dr. Levy (a renown MD and Cardiologist), "Vitamin C is truly Nature's gift to health and healing." So don't overlook this helpful nutrient in your quest for health. In event your are confronted with a cancer bout and especially if not not obtaining desired results from conventional treatments as example, you may well wish to look into mega-dosing of Vitamin C via IV or Liposomal oral method. A recognized quality source of the Liposomal variety is LivOnLabs.com, as recommended by Dr. Levy. We find it interesting that animals can make their own Vitamin C, but humans must rely on diet and supplements. God must have assumed we were smart enough to look after our own well being :-). Our bodies are said to require 60 - 5,000 mg daily for formation of connective tissue, bones and teeth, and to assist in utilization of other vitamins, plus it acts as an antioxidant. Foods such as citrus fruits, strawberries, broccoli, melons, peppers, collards, dandelion greens, onions, radishes, watercress, all contain Vitamin C. The recommended 5 daily servings of fruits and vegetables (approx. 2.5 cups) would provide about 200 mg. For oral supplementation, Dr. Joseph Mercola at mercola.com recommends a minimum of 1000 mg for daily maintenance. He prefers the Liposomal form for the most effective and superior delivery to reach our body cells. Stay Well, Stay Prepared and Stay Prayed Up!

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