

Seize the Day with Vitamin C:

Rebuild and Repair Your Body, so it won't Breakdown Tomorrow

Vitamin C, in the form of ascorbic acid, is one of the most important antioxidants that you can put into your body. As you age, your body breaks down. To maintain longevity, it is important to rebuild and repair on a daily basis, so that your body can thrive in a state of health, wellness, and vitality. By now you have likely heard of taking Vitamin C to help reduce the duration of the common cold, but the broad range of which ascorbic acid affects the human body is both magnificent and awesome. Would you be interested to know that ascorbic acid is essential for several bodily functions as well as possessing positive therapeutic value for a number of health related injuries and disease states? If so read on as we highlight and explore the benefits of daily supplementation with ascorbic acid, to ensure that your body and all of its vital processes can operate as effectively and efficiently as possible.

First of all, it is important to understand, that during our human evolution, there are two key genetic mutations that increase the need for modern humans to maintain a sufficient daily intake of ascorbic acid today. Unlike most animals, we humans, as well as monkeys and guinea pigs, now lack the ability to synthesize ascorbic acid from glucose, therefore, we must get it from our diet. Also, along the way, humans developed a genetic mutation which inhibited synthesis of the enzyme uricase, which is necessary to properly metabolize uric acid.

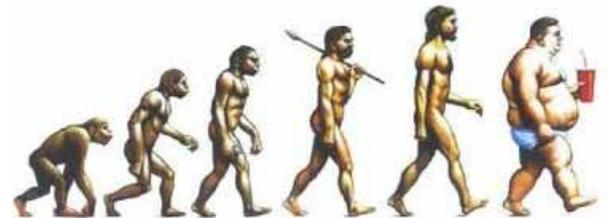
A major function of ascorbic acid is its antioxidant properties, anti-aging, anti-cancer, anti-inflammatory. Interestingly, ascorbic acid also plays a major role in metabolizing fructose, the sugar found in fruits, decreasing the effect that it has on the development of metabolic syndrome. Metabolic syndrome encompasses several health debilitating conditions such as insulin resistance and diabetes, high triglycerides and cholesterol, high blood pressure, arterial plaque buildup and increased risk of clotting, and ultimately heart disease, stroke, and other blood related diseases. Ascorbic acid also lowers blood concentration uric acid by stimulating its excretion in urine.

It has been hypothesized that the loss of ascorbic acid synthesis occurred at a time during human evolution when there was a global cooling. Before this cooling, early humans and apes main food source was fruit. With the cooling came decreased access to fruit and an extinction of many mammalian species occurred. This genetic mutation, the inability to synthesize ascorbic acid, may have actually benefited early humans and primates of the time by enhancing the effects of fructose and increasing blood levels of uric acid.

Simple sugars, like fructose, cause an increase in uric acid. Everyone produces uric acid to some degree in the body. Uric acid is produced naturally in the body as a waste product from the process of cells dying and releasing purines.

Purines are natural substances found in all of the body's cells and in virtually all foods. They provide part of the chemical structure of our genes and the genes of all plants and animals. When cells die and get recycled, the purines in this genetic material also get broken down. Uric acid is the chemical that gets produced when the purines have been completely broken down.

The shape of things to come



SUGAR AND URIC ACID: THE WOLF IN SHEEPS CLOTHING



In most mammals, uric acid is metabolized into the byproduct allantoin by the enzyme uricase, and excreted in the urine. Humans lack the ability to produce the uricase enzyme, and as a result, have a higher blood concentration of uric acid. Thus, it is hypothesized that for our early ancestors, the ascorbic acid mutation as well as the uricase enzyme mutation may have occurred as a way to enhance the effects of fructose and uric acid to increase fat stores and the likelihood of species preservation and survival. Unlike today, early humans did not lead such lethargic lifestyles. They were more active, and had to move about to locate food and avoid predators, and so the increased fat stores did not result in a bunch of obese and disease affected hominids but served more as a function of keeping them alive.

While these genetic mutations may have been beneficial to our ancestors, the lack of these genes in modern humans has an inverse relationship as it applies to our diet and lifestyle. Today, humans have a higher blood concentration of uric acid compared to other animals that produce uricase, and therefore have a higher incidence of oxidative stress and disease than other species. Oxidative stress is associated with the process of aging and inflammation, various disease states ranging from autoimmune disorders, to cardiovascular disease, and brain and neurological diseases like Alzheimer's and Parkinson's.

Due to an increase in the popularity of the Western Diet (a diet high in saturated fats, red meats, sugars and processed foods, and low in fresh fruits and vegetables containing Vitamin C, whole grains, seafood and white meats) the blood level or serum concentration of uric acid has never been higher in humans than it is today. As a result, society has more inflammatory conditions like obesity and diabetes, and more disease states like heart disease and cancer.



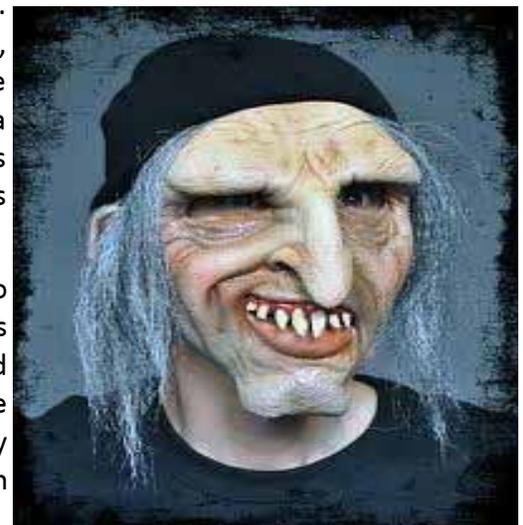
It is not that humans have evolved to develop genes that make us more likely to become obese and have metabolic syndrome, but it is the early genetic mutation and elimination of our ability to synthesize ascorbic acid and uricase coupled with our specific modern dietary intake of unhealthy foods that increases our likelihood of becoming obese and developing diabetes and metabolic syndrome. Therefore, ascorbic acid intake is necessary to impair the detrimental effects of simple sugars and uric acid on the body and keep the blood serum concentration of both consistently below the necessary limit to induce metabolic syndrome. With this in mind, let us expound upon the importance of daily ascorbic acid intake, and detail the many benefits that it provides for slowing the processes of degeneration in the human body.

Vitamin C, ascorbic acid, is essential for the synthesis of collagen in the human body. When a person stops producing collagen, the body begins to break down. Cartilage and tendons degenerate and the joints are no longer structurally sound, blood vessels break open and the body bleeds internally, gums ulcerate and the teeth fall out, the immune system deteriorates, and the body expires. This is a condition more commonly known as scurvy. Fortunately, death from scurvy is rare in modern times, but in ancient Rome, Egypt, and Greece military crews commonly developed scurvy during long voyages at sea and many perished.

Collagen is a type of protein that is produced in the human body and is present to a great degree in the makeup of skin, bone, cartilage, tendon, and teeth. It forms strong, insoluble fibers and serves as connective tissue between cells that hold the body together. In fact, collagen is the most abundant protein built in the body. Collagen cannot be built without Vitamin C. No bodily organ could possibly perform its function without the presence of collagen, and so no bodily organ can be maintained in healthy condition without the presence of Vitamin C.

**SURGEON GENERAL'S
WARNING:**
The Standard American Diet causes approximately two-thirds of the deaths due to disease in America.

DRAMATIZATION OF MAN WITH SCURVY



Vitamin C, ascorbic acid, is present in abundance in the central nervous system. The neurons of the brain have a significantly high concentration of ascorbic acid, which makes sense, as it is the brain that requires the energy to scavenge the body for free radicals while we are sleeping at night. Also, ascorbic acid is required for the synthesis of the neurotransmitter norepinephrine, which affects parts of the brain that are directly related to attention and responses. Along with epinephrine, norepinephrine regulates the fight-or-flight response, the heart rate and blood pressure, alertness, arousal, and decision making processes.

Large amounts of Vitamin C are found in the adrenal glands as well, and this vitamin is essential for the formation of adrenalin. Adrenaline is the hormone that influences our decision making process in any given situation. During times of physical and emotional stress, Vitamin C is used up rapidly. So, if you are under moderate to consistent levels of stress, like most of the civilized world today, then it is very important that you take Vitamin C on a daily basis.

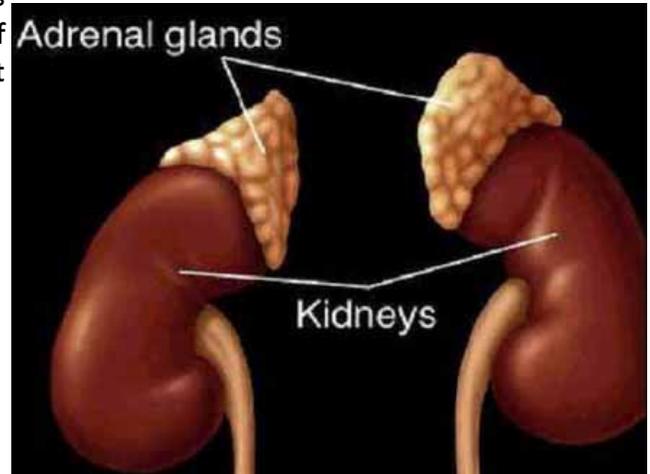
Vitamin C aids in the absorption of iron. The human body depends on iron to complete functions like producing hemoglobin, a protein that carries oxygen from the lungs all throughout the body. Anemia is a condition that develops as a result of low iron and insufficient hemoglobin production, a condition that is especially common in young women and children. When this occurs daily iron intake becomes necessary, but iron intake alone does not guarantee that it will be properly absorbed and metabolized, and the type of iron ingested is also an important factor.

In food iron is found in two forms, heme and non-heme iron. Heme iron, which is well absorbed, makes up about 40% of the iron content in meat, poultry and fish. Non-heme iron is less well absorbed, and makes up about 60% of the iron in animal tissues and all of the iron in fruits, vegetables, grain and nuts. Vegetarian diets contain only non-heme iron, and so the daily recommendation for iron is greater in people with this type of a diet compared to non-vegetarians who consume animal protein as well as fruits and vegetables.

While not necessary for heme iron, the absorption of non-heme iron is enhanced by taking ascorbic acid with it at the same time. When ascorbic acid binds to non-heme iron, it increases its stability and becomes more soluble. When taken with ascorbic acid, non-heme iron is more readily absorbed through the mucous membranes of the intestine and into the bloodstream.

Ascorbic acid aids in the healing of the body's tissues. Often following a surgery or an injury like a wound or burn, it is observed that many individuals can be slow to heal, or develop significant scarring. When wounds heal, the metabolic rate, or amount of energy that the body requires to maintain and repair itself is significantly increased. In the first few days and weeks following a serious injury, the body's ascorbic acid stores can fall to scurvy inducing levels if not kept in check. Without additional Vitamin C intake, in amounts of several grams per day, the formation of new connective tissue to replace the damaged tissue and close the wound is hindered, yielding tissue that is fragile, damaged, and in severe cases missing altogether. The majority of this connective and replacement tissue is comprised of collagen, which Vitamin C is necessary to synthesize, as discussed in the above paragraphs.

Interestingly, an individual's daily requirement of Vitamin C is directly proportional to the degree to which the person is in a state of disease or disrepair. The sicker and more stressed the body becomes, the higher the Vitamin C intake that is necessary, and the more the body can tolerate higher and more frequent doses of Vitamin C. For example, individuals with cancer or heart disease can benefit from mega doses of Vitamin C to aid in the healing process, as their body is under more stress to repair itself, and as they are more likely to be deficient in Vitamin C as a result. Too much Vitamin C can cause diarrhea, and whereas this may occur in a healthy individual who takes 3 grams or more of ascorbic acid in a day, a person with cancer or heart disease may take 10 grams or more in a day and experience no bowel discomfort whatsoever.



As an antioxidant, Vitamin C possesses anti-inflammatory properties, and can provide relief to sinus and allergy sufferers, as well as individuals with rheumatic conditions such as arthritis. When the Vitamin C level is high it reduces the viscosity of bodily fluids. This means that it can thin mucus and reduce inflammation for allergy sufferers. As it applies to allergies, ascorbic acid also functions as an antihistamine, by destroying the histamine molecule and thereby decreasing the concentration of histamine in the blood.

For arthritis sufferers, when blood concentrations of ascorbic acid are high, synovial fluid becomes thinner and allows for increased range of motion and reduced arthritic pain. Synovial fluid is a clear liquid that helps to lubricate joints and tendon sheaths. Individuals with rheumatic disorders like arthritis have been shown to have lower blood concentrations of ascorbic acid than individuals without inflammatory bone and joint conditions.

As mentioned earlier, ascorbic acid is responsible for the formation of collagen and skin repair, and so it can be used to help with healing tissues on the inside and the outside of the body. From this perspective, Vitamin C can help to repair the gut, which is approximately 80% of the human immune system, as well as to help clear up and prevent further breakouts of everything from acne, to psoriasis and eczema on the skin. Again, as an antioxidant, this vitamin is an electron donor, meaning that it helps to neutralize free radicals and rid the body of toxins.

Also, ascorbic acid has an alkalinizing effect on the body, which brings us full circle back to the fact that it is crucial in limiting the effects of simple sugars and uric acid, and restoring the body back to a more pH neutral environment. If you recall from the May Newsletter "The State of Gut Health in America", the gut is made up of good and bad bacteria, with sugar being the fuel that helps bad pathogenic bacteria to grow and thrive. Sugar not only creates a toxic environment in the body, it also makes it become more acidic.

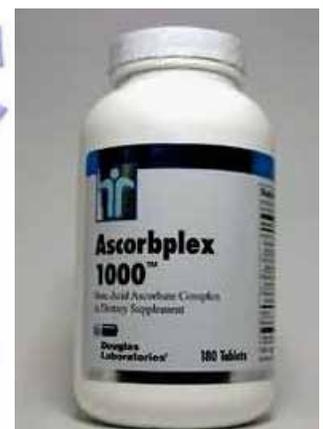
Further still, in addition to animal proteins, sugar is the number one factor for increasing the concentration of uric acid in the body. With increased sugar intake comes increased bad bacteria and toxicity, as well as inflammation and the disruption of the metabolic process. With increased stress on the body this phenomenon does more damage to the body's major detoxification organs, the intestines and the liver, which become less able to properly eliminate toxins on a chronic basis.

At this point the bloodstream becomes the sewer system for the body, which has to make a choice between pushing the toxins out through the skin, and moving them into the tissues to be stored for elimination at a later time. Usually, with the continual bombardment on the body of toxins from our diet, the air that we breathe, and the toxic thoughts that form in our brain from our daily interaction with the world, the body has no choice but to do both.

Many individuals with compromised immune systems and imbalanced gut health not only have some type of skin condition, but they have rheumatic symptoms as well. Therefore, the alkalinizing effect that ascorbic acid has, combating simple sugars and uric acid, is one of the best defenses the body can possess to prevent the acidity and toxicity that are an inevitable byproduct of the modern daily diet and lethargic lifestyle that increasing numbers of our planet's civilized population are adopting.

When it comes to ascorbic acid, the list of health benefits and indications for the repair of disease and dysfunction is too great to display in the confines of this newsletter alone. Should Vitamin C be placed under a stronger emphasis for individuals who desire to maintain or regain an exemplary state of health? With the background and explanation of Vitamin C presented here, it is clear that the importance of this vitamin is well founded.

Vitamin C
Citrus fruits, green peppers, strawberries, tomatoes, broccoli and sweet and white potatoes are all excellent food sources of vitamin C (ascorbic acid)



Like many of our other deficiencies, Vitamin D3, B vitamins, and magnesium for example, the lack of Vitamin C in our daily diet is a major contributing factor to many of our most prevalent diseases and causes of death in our society today. So, instead of waiting to be diagnosed with a disease or debilitating health condition, empower yourself and provide your body each day with the ammunition that it needs to meet the challenge of maintaining wellness. It is our belief that the key to good health is to provide your body with the tools necessary to maintain your health. Vitamin C, in the form of ascorbic acid, is one of the most effective and inexpensive tools that you can have, and your body will thank you for making it a routine part of your diet in your daily life.