Vitamin C

Supports Healthy Immunity, Bones, Joints, Blood Vessels, Skin and More

- Supports the body during periods of stress
- An effective foundational vitamin

Gluten Free  Vegan  Non-GMO  Cold & Flu

Foundation Nutrition

AOR Code  Variant
AOR04287  100 VEGI-CAPS
AOR04061  300 VEGI-CAPS

Details
Vitamin C is the most popular vitamin and antioxidant. The body cannot make its own, so getting enough vitamin C from the diet is essential. Vitamin C is sometimes considered the “go-to” supplement as it has a wide range of benefits in the body. It is most commonly used to strengthen immunity and prevent the cold and flu, but it also improves wound healing time, boosts immunity, and promotes healthy, youthful skin, strong bones and clear blood vessels. Interestingly, the only species that cannot produce their own vitamin C are also the only species who develop atherosclerosis, ie. hardening of the arteries. This suggests a clear role for vitamin C in cardiovascular health.

Vitamin C is a potent antioxidant, protecting the body from disease and aging and even helping recycle other antioxidants such as vitamins A and E, glutathione and lipoic acid, making them more effective. Due to its anti-inflammatory and anti-histamine effects, vitamin C is also effective for allergy relief, and at high doses it can act as a gentle laxative for occasional constipation. Vitamin C is needed for the synthesis of adrenal hormones, making it an important nutrient for combating the negative effects of stress.

AOR’s Vitamin C formula is a high dose, pure ascorbic acid and can benefit everyone, especially those who have a family history of cardiovascular disease, seasonal allergies, weak immune system or people who do not regularly consume citrus fruits or other foods rich in vitamin C.
Discussion
Vitamin C is a factor in the maintenance of good health and in the normal development and maintenance of bones, cartilage, teeth, and gums.

Product Variation
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Supplements Facts
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<th>Serving Size: 1 Capsule</th>
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<td>Vitamin C (ascorbic acid)</td>
<td>1000 mg</td>
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Non-medical ingredients:
ascorbyl palmitate, sodium stearyl fumarate. Capsule: hypromellose.

Guarantees
AOR™ guarantees that all ingredients have been declared on the label. Contains no wheat, gluten, corn, nuts, peanuts, sesame seeds, sulphites, mustard, soy, dairy, eggs, fish, shellfish or any animal byproduct.

Adult Dosage
Take 1 capsule daily with or without food, or as directed by a qualified health care practitioner.

Cautions
None known.

Source
Pharmaceutical synthesis

Main Application
Antioxidant
Antiviral (colds/flu)
Anti-inflammatory
Cardiovascular health
Bones, skin, collagen
Anti-tumor
Stress
Disclaimer

The information and product descriptions appearing on this website are for information purposes only, and are not intended to provide or replace medical advice to individuals from a qualified health care professional. Consult with your physician if you have any health concerns, and before initiating any new diet, exercise, supplement, or other lifestyle changes.

Research

Background

Ascorbic Acid: The Anti-Scurvy Vitamin

We have all heard of Vitamin C. Yet how many of us truly know what it is? Vitamin C, a.k.a. Ascorbic Acid, is the antiscorbutic vitamin. Although scurvy was first described during the Crusades and commonly plagued early explorers and voyagers, the specific relationship between scurvy, citrus foods, and ascorbic acid was not established until the 20th century.

We Can’t Make Our Own

English sailors have been nicknamed “limeys” since the days when the Queen’s ships were required to carry citrus fruits (mainly lemons) as scurvy preventatives. For practical purposes, the examination of vitamin C needs to begin in 1937, and the name Albert Imre Szent-Gyorgyi (1893-1986), a Hungarian-born biochemist, is the most prominent name by far when it comes to vitamin C. Szent-Gyorgyi isolated this vitamin in 1937, winning the Nobel Prize for Medicine in that same year. His research on biological oxidation provided the basis for Krebs’ citric acid cycle. Curiously, nearly all species of mammals can synthesize their own vitamin C endogenously. The few interesting exceptions are primates, guinea pigs, and a handful of exotic curiosities such as the Indian fruit bat.

Protector of Lipids

Unlike other water-soluble vitamins, vitamin C, or ascorbic acid, doesn’t appear to act either as a catalyst or as a coenzyme. Most people think of it primarily as an antioxidant – which it is, and a crucial one at that. It can scavenge both reactive oxygen species and reactive nitrogen species. By virtue of this scavenging activity, ascorbic acid inhibits lipid peroxidation, oxidative DNA damage and oxidative protein damage. In this renowned function as an antioxidant, ascorbic acid seems especially prominent as a protector of lipids and lipid-based nutrients. It directly protects such fat-soluble vitamins like vitamin A and vitamin E, not to mention various fatty acids from the damage caused by the excessive oxidation of free radicals.

A Member of the Networking Antioxidants
Ascorbic acid is oxidized by reactive oxygen and nitrogen species to the semidehydroascorbate radical. The semidehydroascorbate radical is either reconverted to ascorbate via the enzyme NADH semidehydroascorbate reductase or is converted to dehydroascorbate. Dehydroascorbate in turn can be converted back to ascorbate via glutathione-dependent enzymes or catabolized. As per glutathione, ascorbic acid helps preserve reduced intracellular glutathione concentrations. This activity likely helps maintain nitric oxide levels and potentiates its vasoactive effects. Oral ascorbic acid can reach high enough concentrations to scavenge superoxide radicals. Therefore, intracellular sources of superoxide that impair nitric oxide may be scavenged by oral ascorbic acid.

**Research**

**Anti-Carcinogenic**

There is a fair amount of depth to the ascorbic acid research pertaining to cancer, most of it on the preventative aspect. Such preventative effects may be accounted for, in part, by ascorbic acid’s ability to detoxify carcinogens directly, as well as blocking carcinogenic processes via its antioxidant activity. Vitamin C can prevent the formation of such carcinogens as nitrosamines in foods and in the gastrointestinal tract. It can also detoxify such chemical mutagens and carcinogens as anthracene, benzo[a]pyrene, organochlorine pesticides and heavy metals. High concentrations of ascorbic acid in gastric juice may reduce the risk of gastric cancer by inhibiting the formation of carcinogenic N-nitroso compounds. Additionally, increased oxidative stress to the gastric mucosa has been reported in H. pylori-associated gastritis, a condition that predisposes to gastric cancer. There is preliminary evidence suggesting that vitamin C can inhibit the growth of Helicobacter pylori.

**Vasodilation**

For those suffering from hypertension, there is an indication that ascorbic acid may improve endothelial-dependent vasodilation. That indication is likewise evident in those with hypercholesterolemia as well, and ascorbic acid may also help restore nitric oxide-mediated flow-dependent vasodilation in those with congestive heart failure.

**Immunity**

The well-worn association between vitamin C and the common cold may be explained by the anti-histamine effects of the vitamin. These same effects also reduce the immunosuppressive activity of histamine, thus enhancing neutrophilic chemotaxis, giving ascorbic acid an overall immunomodulatory role as well.

**Respiratory Conditions**

Clinical studies have demonstrated that ascorbic acid may protect against asthma and other obstructive pulmonary diseases, as well as protect the airways against the effects of allergens, viral infections and irritants in some. In one study, a dosage of 1500 mg of vitamin c per day was given for two weeks; it was found that the ascorbic acid supplementation provided a protective effect against exercise-induced airway narrowing in asthmatic subjects. Allergens, viruses and irritants, including ozone, nitrogen oxides and sulfur oxides, subject the airways to increased oxidative stress and
inflammation which can lead to bronchoconstriction. While the antioxidant properties of ascorbic acid are obviously critical in dealing with such conditions, its newly re-examined anti-inflammatory role can also be accredited.

Lead & Metal Chelation

Ascorbic acid also acts as a cofactor in various biochemical reactions to reduce the transition metals, iron and copper. It also protects against the tissue-damaging effect of some toxic chemicals and heavy metals. High serum levels of ascorbic acid have been reported to co-relate with a decreased prevalence of elevated blood lead levels. The mechanism of the possible lead-lowering action of vitamin C is unclear. One study compared ascorbic acid directly to the lead-chelating agent EDTA and found them to have equivalent activity with respect to chelating lead.

Collagen Formation

Beyond its antioxidant role, scientists will more often than not regard ascorbic acid’s primary activity to be the regulation of collagen formation. Collagen is a protein that makes up the connective tissue found in skin, bones, cartilage, teeth, muscles and the walls of blood vessels. It is the most abundant of the fibers contained in connective tissue which gives our body form and supports our organs. Vitamin C’s role in collagen production begins inside the cells, where it hydroxylates (adds hydrogen and oxygen) to two amino acids: proline and lysine. This helps form a precursor molecule called procollagen that is later synthesized and modified into collagen outside the cell membranes. Without vitamin C, collagen formation is disrupted, causing a wide variety of problems throughout the body.

How Much Vitamin C Do We Need?

The officially recommended daily allowance of vitamin C, which stands at 90 milligrams per day, is an artificial figure obtained through a combination of social convention and bureaucratic convenience. Most scientifically determined optimal daily allowances range from 300 milligrams to 1.2 grams each day, with some older anti-cancer clinical trials experimenting with as much as 5 grams! It should be noted, however, that dosages on that end of the scale may be biochemically inefficient as ascorbic acid is a water-soluble compound that is easily absorbed but is not stored in the body – excess amounts are simply excreted.

Market Trends

Vitamin C is thought of as the cure-all and is often taken as an antioxidant, detoxifer, for boosting the immune system and for overall health. The most common types of vitamin C available on the retail market are ascorbic acid, calcium ascorbate (Ester C is a patented product containing calcium ascorbate) and magnesium ascorbate.

While Vitamin C is immensely important because humans cannot produce it, research has found some gaps to the cure-all theory. However, these gaps can be filled in by combining Vitamin C with various natural substances to increase the effectiveness of Vitamin C for many health conditions. To learn more about enhancing Vitamin C’s activity, see the Related Products section.
AOR Advantage

AOR’s Vitamin C provides an effective dose of this important vitamin in powder or capsule form for your convenience. For ways to enhance Vitamin C’s activity, see the Related Products section on the label info tab. [link]

References


Abstract

Vitamin C supplementation lowers serum low-density lipoprotein cholesterol and triglycerides: a meta-analysis of 13 randomized controlled trials.


McRae MP.

OBJECTIVE: Vitamin C has been shown to be an effective therapeutic for reducing total serum cholesterol, but epidemiologic studies have determined that low-density lipoprotein (LDL) cholesterol and high-density lipoprotein (HDL) cholesterol are actually better predictive measures of coronary heart disease risk. Therefore, the purpose of this study was to provide a comprehensive meta-analysis of randomized controlled trials to investigate the effect of vitamin C supplementation on LDL
and HDL cholesterol as well as triglycerides in patients with hypercholesterolemia.

METHODS: Thirteen randomized controlled trials published between 1970 and June 2007 were identified using Medline and a manual search. From the 13 trials, 14 separate group populations with hypercholesterolemia and who were supplemented with at least 500 mg/d of vitamin C for between 3 and 24 weeks were entered into the meta-analysis. This meta-analysis used a random-effects model; and the overall effect sizes were calculated for changes in LDL and HDL cholesterol, as well as triglyceride concentrations.

RESULTS: The pooled estimate of effect for vitamin C supplementation on LDL and HDL cholesterol was -7.9 mg/dL (95% confidence interval [CI], -12.3 to -3.5; P = .000) and 1.1 mg/dL (95% CI, -0.2 to 2.3; not significant), respectively. The pooled estimate of effect for vitamin C supplementation on triglycerides was -20.1 mg/dL (95% CI, -33.3 to -6.8; P < .003).

CONCLUSION: Supplementation with at least 500 mg/d of vitamin C, for a minimum of 4 weeks, can result in a significant decrease in serum LDL cholesterol and triglyceride concentrations. However, there was a nonsignificant elevation of serum HDL cholesterol.

Ascorbic acid supplementation attenuates exercise-induced bronchoconstriction in patients with asthma.


Tecklenburg SL, Mickleborough TD, Fly AD, Bai Y, Stager JM.

BACKGROUND: Previous research has shown that diet can modify the bronchoconstrictor response to exercise in asthmatic subjects.

OBJECTIVE: Determine the effect of ascorbic acid supplementation on pulmonary function and several urinary markers of airway inflammation in asthmatic subjects with exercise-induced bronchoconstriction (EIB).

METHODS: Eight asthmatic subjects with documented EIB participated in a randomized, placebo controlled double-blind crossover trial. Subjects entered the study on their usual diet and were placed on either 2 weeks of ascorbic acid supplementation (1500mg/day) or placebo, followed by a 1-week washout period, before crossing over to the alternative diet. Pre- and post-exercise pulmonary function, asthma symptom scores, fraction of exhaled nitric oxide (F(E)NO), and urinary leukotriene (LT) C(4)-E(4) and 9alpha, 11beta-prostagladin (PG)F(2)] were assessed at the beginning of the trial (usual diet) and at the end of each treatment period.

RESULTS: The ascorbic acid diet significantly reduced (p

CONCLUSION: Ascorbic acid supplementation provides a protective effect against exercise-induced airway narrowing in asthmatic subjects.
Study of the protective effect of ascorbic acid against the toxicity of stannous chloride on oxidative damage, antioxidant enzymes and biochemical parameters in rabbits.

Toxicology. 2007 Mar 18;

Yousef MI, Awad TI, Elhag FA, Khaled FA.

Stannous chloride (SnCl(2)) is a reducing chemical agent used in several man-made products. SnCl(2) can generate reactive oxygen species (ROS). Therefore, the present study has been carried out to investigate the antioxidant action of L-ascorbic acid (AA) in minimizing SnCl(2) toxicity on lipid peroxidation, antioxidant enzyme, and biochemical parameters in male New Zealand white rabbits. Animals were assigned to one of four treatment groups: 0mg AA and 0mg SnCl(2)/kg BW (control); 40mg AA/kg BW; 20mg SnCl(2)/kg BW; 20mg SnCl(2) plus 40mg AA/kg BW. Rabbits were orally administered the respective doses every other day for 12 weeks. Results obtained showed that SnCl(2) significantly (P

Ascorbic acid increases healing of excision wounds of mice whole body exposed to different doses of gamma-radiation.

Burns. 2007 Jan 12;

Jagetia GC, Rajanikant GK, Mallikarjun Rao KV.

Because of the practical importance of acute radiation exposure associated with combined injuries, it is imperative to investigate the efficacy of cost-effective nutritional factors in the reconstruction of irradiated wounds. Therefore, effect of pretreatment of ascorbic acid was studied on the healing of excised wounds in mice exposed to 2, 4, 6 and 8Gy whole body gamma-radiation. A full-thickness wound was created on the dorsum of the irradiated mice and the progression of wound contraction was monitored by capturing video images of the wound at various varying days after irradiation. Irradiation caused a dose dependent delay in wound contraction and wound healing time, while ascorbic acid pretreatment resulted in a significant acceleration in the rate of wound contraction and a decrease in the mean wound healing time. To understand the mechanism of healing, collagen, hexosamine, DNA, nitrite and nitrate contents were measured in the granulation tissue of wounded mice treated with ascorbic acid before exposure to 6Gy gamma-radiation. Ascorbic acid treatment prior to irradiation enhanced the synthesis of collagen, hexosamine, DNA, nitrite and nitrate contents. The histological assessment of wound biopsy revealed an improved collagen deposition, and increase in fibroblast and vascular densities. The present study demonstrates that ascorbic acid pretreatment has a beneficial effect on the irradiated wound and could be a substantial therapeutic strategy to accelerate wound repair in irradiated wounds and in the cases of combined injury situations.