

Quercetin Ascorbate

*Powerful antioxidant powder to support a healthy inflammatory response**



By David M. Brady, ND, DC, CCN, DACBN, IFMCP, FACN and Caitlin Higgins, MS, CNS, LDN

THIS INFORMATION IS PROVIDED FOR THE USE OF PHYSICIANS AND OTHER LICENSED HEALTH CARE PRACTITIONERS ONLY. THIS INFORMATION IS INTENDED FOR PHYSICIANS AND OTHER LICENSED HEALTH CARE PROVIDERS TO USE AS A BASIS FOR DETERMINING WHETHER OR NOT TO RECOMMEND THESE PRODUCTS TO THEIR PATIENTS. THIS MEDICAL AND SCIENTIFIC INFORMATION IS NOT FOR USE BY CONSUMERS. THE DIETARY SUPPLEMENT PRODUCTS OFFERED BY DESIGNS FOR HEALTH ARE NOT INTENDED FOR USE BY CONSUMERS AS A MEANS TO CURE, TREAT, PREVENT, DIAGNOSE, OR MITIGATE ANY DISEASE OR OTHER MEDICAL CONDITION.

Quercetin Ascorbate powder is a powerful flavonoid and antioxidant blend that provides 500 mg of vitamin C (as ascorbic acid) and 500 mg of quercetin in each 1 g serving. Vitamin C functions synergistically with bioflavonoids such as quercetin to not only enhance the modulation of inflammatory factors but to also aid in repairing oxidative damage resulting from allergen exposure.* Quercetin is one of several flavonoids that have regulatory effects on mast cells, basophils, and eosinophils.^{1,2} Vitamin C helps to regulate histamine levels and helps to control inflammatory responses, among its various other critical roles.² Research suggests that both quercetin's and ascorbic acid's anti-inflammatory, antioxidant, and antiviral actions are attributed to their ability to interrupt the production and actions of pro-inflammatory mediators and protein complexes such as nuclear factor kappa-beta (NF- κ B), cytokines, prostaglandins, and interleukins.^{1,4-6}

Quercetin-Ascorbate may help*:

- Regulate the immune system
- Reduce symptoms associated with allergic rhinitis, sinusitis, and asthma
- Regulate inflammatory responses
- Support upper respiratory tract health
- Reduce oxidative stress

Quercetin

Quercetin, also known as the "king of the flavonoids," is considered to be among the top plant-based polyphenolic compounds due to its powerful antioxidant properties and its ability to support a healthy inflammatory response in the body. Quercetin is a potent flavonol found in many foods that are recognized for their health benefits, such as red onions, apples, olive oil, dark berries and grapes, capers, broccoli, salad greens and culinary herbs such as dill, cilantro, watercress, and radicchio.⁴ (This phytochemical contributes to the richly-colored pigments in these foods.) Novel genome research has found that upon binding to DNA or other genome-associated proteins, quercetin assumes the role of a cis-regulatory transcription factor for genetic expressions that are involved in the cell cycle, differentiation, and development.⁷ Moreover, this polyphenolic compound also demonstrates an ability to aid in the attenuation of lipid peroxidation, capillary permeability, and platelet aggregation.⁸

When exposed to environmental allergens, quercetin is known to inhibit the release of histamines from basophils and mast cell (MC) degranulation, as well as suppress eosinophil (EOS) activation.^{1,2} Histamine and EOS are primarily responsible for many of the unpleasant symptoms associated with allergies and seasonal upper respiratory challenges. Eosinophils are believed to be the main type of cell recruited during the late phase response of an allergic reaction.² Though they can perform beneficial roles in host defense, MCs and EOS are implicated in the pathogenesis of allergies and other inflammatory diseases as they have the ability to release chemical pro-inflammatory compounds such as lipid mediators, cytokines, and chemokines that are contained in the granules.¹

Quercetin helps to improve T-regulatory helper cell (i.e., Th1/Th2) balance, and arrests antigen-specific IgE antibody formation.³ In an animal model, quercetin significantly reduced epithelial thickness, goblet, and mast cell numbers, IgE levels, and immunohistochemical markers compared to untreated mice with allergic airway inflammation.⁹ Quercetin has an inhibitory effect on histidine decarboxylase (HDC) mRNA transcription, which are the enzymes responsible for catalyzing the synthesis of histamine from histidine and suppresses IL-6 release by human mast cells, which may, in part, help resolve inflammatory conditions.¹ Furthermore, quercetin interacts with several of the protein kinase enzymatic reactions (i.e., it has the ability to displace ATP binding from PI3K and activate AMP-activated protein kinase), which is shown to exert anticancer and anti-inflammatory effects.¹ A review elucidates how the properties of quercetin are effective in late-phase bronchial asthma responses, allergic rhinitis, and peanut-induced anaphylaxis, and that quercetin is more efficient in inhibiting interleukins 6 and 8 than sedative, anti-allergy/histamine medications.⁴

Vitamin C

Vitamin C is an essential water-soluble nutrient that is unable to be synthesized endogenously by humans, thus it must be supplied through the diet or supplementation.⁶ Dietary sources of vitamin C include kiwifruit, citrus fruits, red bell pepper, strawberries, goji berries, broccoli, Brussels sprouts, and various other foods and herbs. Vitamin C accumulates within leukocytes to high intracellular concentrations, thus significantly contributing to immune defense by supporting cell functions in both the adaptive and innate immune systems.^{10,11} Due to its gene-regulating effects, vitamin C has been shown to help improve B- and T-cell differentiation and proliferation.¹⁰

Serum ascorbate levels below 50 μ M significantly decrease intracellular ascorbate levels within circulating lymphocytes, monocytes, and neutrophils; plasma levels below 23 μ M have been shown to result in a state of hypovitaminosis C, commonly seen in individuals with low fresh vegetable and fruit intake.¹¹ Inadequate intake coupled with increased turnover during severe and/or chronic stress (e.g., illness, trauma, chronic inflammation) may result in low plasma ascorbate levels and severely depleted levels \leq 20 μ M is seen in very ill patient populations.¹²

Vitamin C deficiency has been shown to result in impaired immunity and increased susceptibility to infection. Prophylactic prevention of infection requires a daily intake of at least 100-200 mg/day to saturate plasma levels in order to optimize cell and tissue ascorbate levels.¹¹ In contrast, for established infections, much higher doses are required to compensate for the damage caused by enhanced inflammation and metabolic demands.¹⁰

Because of vitamin C's role in modulating reactions associated with allergies such as allergic rhinitis, sinusitis, and asthma, ascorbic acid is helpful in supporting patients who suffer from histamine sensitivity or intolerance. Research shows that vitamin C may help decrease bronchial hypersensitivity caused by the common cold¹³ and has the ability to significantly reduce histamine concentrations in the serum by increasing the activity of diamine oxidase (DAO), the primary enzyme responsible for breaking down histamine in the body.³

Vitamin C's ability to readily donate electrons, thus protecting proteins, lipids, carbohydrates, and nucleic acids from oxidative damage, significantly contributes to its immune-modulating properties. Vitamin C's antioxidant function is a hallmark of this nutrient, as it is a potent neutralizer of free radicals and helps to recycle vitamin E and glutathione. Increased levels of oxidative stress are associated with a wide array of chronic health issues. They are both a potential contributor to, and a downstream effect of conditions including but not limited to type 2 diabetes,¹⁴ Alzheimer's disease,¹⁵ other neurodegenerative disorders,¹⁶ and frailty in aging individuals.¹⁷

Supplement Facts

Serving Size 1 gram (approx. ¼ teaspoon)

Servings Per Container 100

Amount Per Serving		% Daily Value
Vitamin C (as Ascorbic Acid)	500 mg	556%
Quercetin	500 mg	*

*Daily Value not established.

Other Ingredients: Silicon dioxide.

Recommended Use: Take 1 gram (approx. one quarter teaspoon) per day with a meal, or as directed by your health-care practitioner.

It is advised for patients to dose vitamin C at no more than 500 mg at a time, splitting multiple dosages throughout the day for optimal absorption and bioavailability.

For a list of references cited in this document, please visit:

<https://www.designsforhealth.com/techsheet-references/quercetin-ascorbate-references.pdf>

Dosing recommendations are given for typical use based on an average 150 pound healthy adult. Health-care practitioners are encouraged to use clinical judgement with case-specific dosing based on intended goals, subject body weight, medical history, and concomitant medication and supplement usage. Any product containing botanical substances has the potential for causing individual sensitivities. Individual monitoring, including liver function tests, may be appropriate.

***These statements have not been evaluated by the Food and Drug Administration. These products are not intended to diagnose, treat, cure or prevent any disease.**

To contact Designs for Health, please call us at (860) 623-6314, or visit us on the web at www.designsforhealth.com.