

LIPOSOMAL



VITAMIN C+ ELDERBERRY

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Liposomal Vitamin C+ Elderberry is a blend of vitamin C (L-ascorbic acid) and the time-honored botanical black elderberry (*Sambucus nigra*), designed to support healthy immune function. Vitamin E in the form of highly bioavailable delta-tocotrienols rounds out our formula, providing further antioxidant and immune system support.



EDUCATION

TURNING TO NATURE FOR POWERFUL SEASONAL IMMUNE SUPPORT

While conventional medicine is excellent in the areas of emergency care and surgery, it is not as well equipped to deal with seasonal respiratory illnesses such as colds and influenza.

First, many seasonal illnesses are of viral origin, making antibiotics virtually useless for the treatment of these conditions. Nonetheless, research indicates that doctors continue to indiscriminately prescribe antibiotics for diseases of a viral nature, exacerbating the burgeoning global problem of antibiotic resistance.¹ Secondly, the conventional medical compendium of antiviral drugs is limited, and many of the available drugs come with significant side effects.²

Viral genetic material is also highly mutable, capable of rapidly adapting to drugs and adopting more virulent forms.³ The prevention of viral respiratory illnesses is also outside the repertoire of conventional medicine save for the influenza vaccine, which research shows may possibly increase the risk of non-influenza viral respiratory infections.⁴

Given the lack of interventions available for seasonal, viral respiratory illnesses in the conventional medical paradigm, what can we do to fortify our bodies against viral threats? Is there a way to protect ourselves from the harmful effects of viral respiratory illnesses, or shorten the duration of illness? Research indicates that vitamin C and elderberry can fulfill the vital need for interventions to both prevent and reduce the length of viral respiratory illnesses.

VITAMIN C

Vitamin C (ascorbic acid) offers multifaceted benefits to the immune system, supporting cellular integrity⁵, antioxidant status,^{10,11,12} and respiratory function during viral infection.^{13,14}

Supports Barrier Integrity

The epithelial cells of the skin, lungs, and gastrointestinal tract serve as a first-line defense against microbial invaders, including viruses responsible for respiratory infections such as colds and flu. Vitamin C supports epithelial barrier integrity, enhancing the function of these central defense systems.⁵

Supplement Facts

Serving Size: 5 mL (1 tsp.)
Servings Per Container: 20

	Amount Per Serving	% Daily Value
Vitamin C (as sodium ascorbate)	1000mg	1111%
Sodium	125mg	5%
ElderCraft® European Black Elderberry Extract (<i>Sambucus nigra</i> L.), (contains 3.2 grams of black elderberry herb equivalent)	100 mg	**
DeltaGOLD® Tocotrienols	8 mg	**

**Daily Value not established

Other Ingredients: Water, glycerin, ethanol, highly purified phospholipids, tocopherol, citric acid, natural citrus oils

Antioxidant Properties

Vitamin C is a potent reducing agent, meaning it readily donates electrons to electron-deficient recipient molecules (also referred to as free radicals), stabilizing their biochemical structure and inhibiting a chain reaction of oxidative stress. Vitamin C's ability to terminate these harmful chain reactions makes it one of the body's most crucial antioxidants. In fact, vitamin C is the body's primary non-enzymatic, water-soluble antioxidant in blood plasma and tissues. The potent antioxidant properties of vitamin C make it a valuable ally for optimal immune function.⁵

The antioxidant properties of vitamin C are invaluable in the battle against pathogenic bacteria and viruses. In the process of fighting pathogens, immune cells called neutrophils undergo an "oxidative burst," a rapid release of reactive oxygen species used in the immunological defense against pathogens.⁶ While these free radicals have an essential purpose – to activate the innate immune response and directly destroy invading pathogens such as RNA viruses – they have the unintended consequence of damaging the host's cells and organs, including the heart and lungs.^{7,8,9} Vitamin C attenuates pathogen-induced free radical damage, protecting cells from harm while the immune system is hard at work eradicating infection.¹⁰

Vitamin C also boosts the activity of other antioxidants vital to the immune system. It recycles the fat-soluble antioxidant vitamin E and increases endogenous levels of glutathione, the body's premier antioxidant that also fine-tunes the innate immune response to viral infections.^{10,11,12}

Respiratory Health

Vitamin C protects the lungs during severe respiratory infections. Vitamin C also increases the resistance of chicken tracheal cells to infection with the avian coronavirus.^{13,14} It also shortens the duration of convalescence from bacterial pneumonia, a common consequence of severe viral respiratory infections.¹⁵

Inhibits Virus-Induced Inflammation

Viruses activate the NLRP3 inflammasome, a multiprotein complex that plays a crucial role in innate immunity and the production of pro-inflammatory cytokines.¹⁶ Excessive NLRP3 activation contributes to a phenomenon called a "cytokine storm," an overproduction of immune cells and their activating products, cytokines. Cytokine storms occur in the end stages of severe infections, causing symptoms such as acute lung inflammation and fluid buildup in the lungs. The cytokine storm can thus, severely sicken, and sometimes kill, patients.¹⁷ Attenuation of NLRP3 inflammasome activity may inhibit excessive inflammation in viral infections. Vitamin C inhibits the NLRP3 inflammasome¹⁸ and may thus help inhibit virus-induced inflammation.

Antiviral Immune Response

Finally, vitamin C is an essential factor in the antiviral immune response to viral respiratory infections, such as influenza H3N1, through increased production of interferon- α/β .²⁰ It also stimulates phagocytosis, neutrophil chemotaxis, and T cell development and maturation, all crucial processes for fighting pathogenic bacteria and viruses.²¹

ELDERBERRY

Elderberry (*Sambucus nigra*) is a small, dark purple berry with a long history of use in traditional herbal medicine as an aid to the immune system. We use the Haschberg variety European black elderberry in this formula, which is known for its high potency in anthocyanin flavonoids.

Elderberry is an immunomodulator, meaning it balances immune activity. This characteristic enables it to help the immune system fight harmful microbes while inhibiting excessive pathogen-induced inflammation. Elderberry inhibits the entry of viruses into cells and prevents viral replication; it has a mild inhibitory effect on viral invasion at the early stage of infection but is considerably stronger in the later phases of infection.²² It coordinates a more efficient immune response against viruses through the induction of cytokines such as IL-6 and IL-8. Furthermore, its antioxidant anthocyanins may quench excessive inflammation triggered by a viral infection and, finally, promotes the growth of beneficial gut bacteria, many of which have immune-enhancing properties.^{23,24,25} A meta-analysis of RCTs has also found that elderberry supplementation effectively treats upper respiratory symptoms, which are frequently caused by viruses.²⁶ In fact, one study found that overseas travelers using elderberry for ten days before traveling and up to five days after arrival, experienced a two-day shorter duration of cold symptoms (on average), along with noticing a reduction in symptom severity.²⁷

Elderberry Supports Redox Potential, and Antiviral Defenses

Viruses have been found to alter the redox status of host cells, triggering a profound increase in reactive oxygen species (ROS) and a shortage of antioxidants to neutralize them.²⁸ If allowed to continue unabated, altered host cellular redox status can cause a significant inflammatory response, referred to as a "cytokine storm," causing severe cell and tissue damage. Elderberry anthocyanins have been found to improve cellular redox status, and may therefore also support immune balance through this unique mechanism.²⁹

VITAMIN E

Vitamin E is a fat-soluble antioxidant that protects the polyunsaturated fatty acids in cell membranes from oxidative damage, which can be triggered by microbial infections.* It increases white blood cell proliferation, immunoglobulin levels, natural killer cell activity, and antibody activity, thus supporting broad-spectrum immune function.^{30,31} In our formula, we use a unique form of vitamin E called DeltaGold® tocotrienols, which offers fifty times the antioxidant activity of tocopherols, the form of vitamin E used in many competitor supplements.³²

LIPOSOMAL DELIVERY SYSTEMS ENHANCE ANTHOCYANIN AND VITAMIN C BIOAVAILABILITY

Many plant anthocyanins have poor bioavailability, limiting their therapeutic effects in the body.³³ Research indicates that nano-sized and liposomal delivery systems enhance the bioavailability and stability of anthocyanins, including those in elderberry.^{34,35,36}

Quicksilver Delivery Systems® improve upon liposomal and emulsification technology with smaller, more stable particles made from the highest grade ingredients available. In addition to exceptional absorption rates, these tiny liposomal and nanoemulsified particles enhance the lymphatic circulation of nutrients and intracellular delivery, after ingestion.

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References available at quicksilverscientific.com/vitamincelderberryreferences

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WARNING: NOT FOR USE BY INDIVIDUALS UNDER THE AGE OF 18 YEARS. DO NOT USE IF PREGNANT, BREAST-FEEDING, OR PLANNING TO BECOME PREGNANT. KEEP OUT OF REACH OF CHILDREN. Consult a healthcare professional before use if you have any medical condition or are taking any other supplements or medications. Do not exceed recommended dosage. See www.quicksilverscientific.com for additional safety information.

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