GENESTRA BRANDS®

# Ascorbyl-C + Bioflavonoids


## Lipid- and water-soluble vitamin C plus citrus bioflavonoids

- Includes ascorbyl palmitate, a lipid-soluble form of vitamin C
- Buffered with zinc ascorbate for individuals sensitive to ascorbic acid
- Provides a dietary antioxidant that moderates the effects of oxidative stress on normal physiological functions*
- Helps to maintain immune and vascular function*
- Offers 600 mg of vitamin C and 60 mg of citrus bioflavonoids per day
- Provides 24.9 mg zinc, 24.9 mg magnesium and 37.5 mg potassium per day

Ascorbyl-C + Bioflavonoids offers an excellent source of vitamin C in both lipid- and water-soluble forms, plus minerals and citrus bioflavonoids. Vitamin C is one of the most important dietary antioxidants, and helps to reduce free radical damage in body tissues. Although normally only water-soluble, this formula provides vitamin C from ascorbyl palmitate, a bioavailable lipid-soluble form shown in preclinical research to cross the blood-brain barrier and scavenge free radicals in the brain. Zinc ascorbate is also included to buffer vitamin C. As this neutral pH form of vitamin C is gentler on the stomach, it may reduce the potential gastric irritation associated with ascorbic acid, making it ideal for sensitive individuals. Along with vitamin C, zinc helps to maintain immune function, and is especially important for T cell function, macrophage development, natural killer cell activity and cytokine production. Potassium plays a vital role in vascular function, and helps to maintain electrolyte balance with magnesium. As many adults do not consume the recommended level of vitamin C or these essential minerals, Ascorbyl-C + Bioflavonoids contributes to their recommended dietary intakes. Citrus bioflavonoids are included to provide additional antioxidants, and have been shown in preclinical studies to increase the bioavailability of vitamin C.‡

**SUPPLEMENT FACTS**
Serving Size 1 Capsule
Servings per Container 90

| AMOUNT PER SERVING | | % DV |
|---|---|---|
| Vitamin C (as ascorbyl palmitate/zinc ascorbate) | 200 mg | 222% |
| Magnesium (as magnesium citrate) | 8.3 mg | 2% |
| Zinc (as zinc ascorbate) | 8.3 mg | 75% |
| Potassium (as potassium citrate monohydrate) | 12.5 mg | <1% |
| Citrus Bioflavonoids (from lemon/orange/tangerine/grapefruit/lime fruit) | 20 mg | * |

* Daily Value (DV) not established

Other ingredients: Hypromellose

**Recommended Dose**
Take 1 capsule 3 times daily with meals or as recommended by your health professional.

**Size**
90 Vegetarian Capsules

**Product Code**
01186

Non GMO · Gluten Free · Dairy Free · Vegan

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‡ These statements have not been evaluated by the Food and Drug Administration. This product is not intended to diagnose, treat, cure, or prevent any disease.

# Ascorbyl-C + Bioflavonoids

## Scientific Rationale:

Vitamin C is a water-soluble antioxidant in the plasma and cellular fluid.[1‡] It directly scavenges reactive oxygen and nitrogen species, which can damage cells and disrupt normal cellular function.[2‡] Vitamin C further protects cells by regenerating other antioxidants, such as glutathione and vitamin E.[2‡] High levels of vitamin C are present in the eye to help decrease light-induced free radical damage, while neutrophils contain vitamin C to protect against reactive oxygen species produced during phagocytosis.[2‡] In addition, vitamin C supports the immune system by regulating lymphocyte proliferation, natural killer cell activity, immunoglobulin production and histamine release.[2‡]

Low vitamin C levels are common among the elderly, individuals of low socioeconomic status, and those with restricted diets or diets low in fruits or vegetables.[2,3] Smokers also have low serum vitamin C levels when compared to non-smokers because tobacco smoke contains oxidizing substances that can increase free radical damage in the body.[2] As this results in a greater turnover of vitamin C, the recommended intake for this nutrient is increased for smokers.[2]

Ascorbyl-C + Bioflavonoids contains a unique form of vitamin C known as ascorbyl palmitate. Preclinical research suggests this lipid-soluble compound is retained in the cell membrane, where it helps to decrease oxidative damage.[4‡] In an animal trial, ascorbyl palmitate was shown to cross the blood-brain barrier and accumulate in neural tissues at a greater level than the water-soluble ascorbic acid.[5] Therefore, ascorbyl palmitate may have a wider antioxidant role by supporting cellular health in membranes not normally accessible to other vitamin C forms.[6,7‡] This formula also contains zinc ascorbate, which buffers vitamin C and helps reduce the potential gastric irritation associated with ascorbic acid.[8]

Preclinical studies suggest vitamin C bioavailability may be affected by the presence of bioflavonoids.[9] Animal studies have reported that combined supplementation of vitamin C and flavonoid-rich extracts provide higher vitamin C levels than vitamin C alone.[9] Similarly, one human trial demonstrated increased vitamin C bioavailability in the presence of a citrus fruit extract.[10‡] Although the exact mechanism has not been confirmed, researchers suggest that bioflavonoids directly scavenge free radicals, increasing vitamin C bioavailability through a sparing action.[9]

Zinc is an important trace element in the body.[11] It acts as a cofactor for more than 300 enzymes and has a key role in stabilizing the structure of numerous proteins.[11,12‡] Zinc is critical to the immune system as a mitogen, which stimulates the production of immune cells.[11] It is especially crucial to T cell function as a cofactor of thymulin, a hormone involved in T cell maturation and differentiation.[11,12‡] Zinc is also required for immunocompetence, the ability of the body to produce an immune response after exposure to an antigen.[11‡] In addition, adequate levels of zinc are required for proper macrophage development, natural killer cell activity and cytokine production.[11,13‡] As the availability of free intracellular zinc can be decreased with aging, zinc supplementation may be particularly helpful for maintaining immune health in the elderly.[11‡]

Potassium is the primary cation inside human cells.[14] It is required to maintain normal cell function, cell volume, electrolyte balance and pH.[15‡] Nearly all cell membranes contain the $Na^+$-$K^+$ pump, which pumps three sodium ions out of the cell for every two potassium ions pumped inward.[16] This uneven distribution of charges produces a change in the membrane potential, which is particularly important to the function of excitable tissues such as nerves and muscle.[17] As potassium channels play a role in regulating vascular smooth muscle relaxation, potassium also promotes blood flow.[16,18‡] Research suggests that individuals worldwide consume potassium at a level below recommended values.[15] This may result from the increased intake of processed foods, as food processing markedly reduces potassium content.[15]

Magnesium is the second-most abundant cation inside cells.[19] It participates in nearly all key intracellular metabolic processes and is a cofactor for more than 300 enzymes.[19] Magnesium plays a critical role in maintaining muscle function by helping to regulate oxygen uptake, energy production and electrolyte balance.[20‡] Research suggests that magnesium also regulates calcium transport and binding to further influence muscle contractions.[19‡] It is estimated that nearly 60% of Americans do not consume adequate levels of magnesium each day.[19] This may result from magnesium losses during food processing or the use of mineral-deficient soil in agriculture.[19] As magnesium excretion increases with age and after strenuous exercise, elderly individuals and athletes may benefit from magnesium supplementation.[20,21‡]


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