VITAMIN C

- Sugar Free
- Buffered Formulations
- Citrus Bioflavonoids

NU Super C provides the essential vitamin C in optimal dosage (1000 mg) for a strong immune system and citrus bioflavonoids as natural antioxidants that protects the cell from oxidate stress.

EACH EFFERVESCENT TABLET CONTAINS	
Ascorbic Acid (Vitamin C)	1 000mg
Citrus Aurantium L. (Bitter Orange)	15 mg
[providing 35% citrus bioflavonoids)	5,25mg

WHAT THE SCIENTISTS SAY

NU Super C Vitamin – Immune Support

As the human body cannot synthesize vitamin C (*i.e.* ascorbic acid, see Fig. 1) itself, it is necessary for effective concentrations of vitamin C to be maintained through nutrition. However, in today's fast-paced world, it isn't practical for most people to consume the required servings of fresh fruit and vegetables on a daily basis to sustain healthy levels.

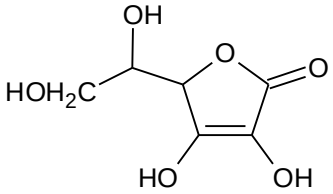

Figure 1: *Structure of Ascorbic Acid*

Thankfully, studies show that oral supplementation leads to an increase in both the plasma and skin content of the human body [**1**]. This is accomplished through the oxidation of vitamin

C producing dehydroxy ascorbic acid, which passes into cells *via* glucose transporters and subsequently reduced back to ascorbic acid for cellular use [**2**].

Vitamin C is renowned as both a safe and effective nutraceutical with a multitude of proven benefits. Significantly, it serves as an electron donor and essential cofactor for the enzymes prolyl hydroxylase and lysyl hydroxylase in the synthetic pathway for intracellular and extracellular collagen. Respectively, these enzymes are critical for the stabilization of the collagen molecule and determining its structural strength through cross-linking in skin, bone and connective tissues such as cartilage [**3**, **4**].

In addition, vitamin C has shown to reduce UVB-induced oxidative damage and UV radiation-induced skin neoplasms in mice and protect human keratinocytes from UVA-induced lipid peroxidation. It also decreases malondialdehyde content which is a marker of oxidative stress, linked to a number of chronic diseases [**1**, **5**]. Meta-analysis studies further show that vitamin C supplementation is not only able to reduce systolic and diastolic blood pressure [**6**], but it can decrease serum low-density lipoprotein (LDL) cholesterol, triglyceride concentrations and blood uric acid [**7**, **8**].

Vitamin C plays a key role in the cellular functions of the innate and adaptive immune system. It is the most effective cofactor of fifteen known biosynthetic and gene regulatory enzymes whose functions include norepinephrine and carnitine biosynthesis, amidation of peptide hormones, hypoxia-inducible Factor (HIF) hydroxylation, regulation of HIF, tyrosine metabolism and histone demethylation, which when looked at together are vital for immune modulating effects [**9**, **10**]. Still with immunity, vitamin C stimulates neutrophil migration to sites of infection, enhances phagocytosis and microbial killing. At the same time, it protects host tissue from excessive damage by enhancing neutrophil apoptosis, clearance by macrophages and decreasing neutrophil necrosis and NETosis [**10**]. It is also known to prevent and treat respiratory and systemic infections by enhancing various immune cell functions. Vitamin C's antihistamine property potentially functions to reduce cold severity and improve the reduced leukocyte motility (*e.g.* chemotaxis) associated with cold symptoms [**11**, **12**]. Furthermore, acute vitamin C supplementation (such as 1000 mg) is associated with a rapid, transient rise in vitamin C concentrations in respiratory tract lining fluids, which could provide immediate antioxidant protection to lung tissues and temporarily lessen oxidative stress in the airways [**13**].

Reactive species are generated by normal cell processes, environmental stressors, air pollutants and chemicals and can cause oxidative damage to lipids, cell proteins, and nucleic acids in DNA. As an effective reducing agent, vitamin C serves as a powerful antioxidant, scavenging both reactive oxygen and nitrogen species in the body [**14**]. The bioflavonoids from *Citrus aurantium L.*, commonly known as bitter orange, further possess potent antioxidant effects and exhibit mild therapeutic properties [**15**]. Combined with a high dose of vitamin C, NU Super C Immune Support effervescent is able to significantly reduce levels of oxidative stress, improve immune function and provide other vital benefits in a high-quality, sugar-free, buffered formulation.

Reference List

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