

# BioProtect Plus™

## Full Spectrum Antioxidant Formulation

**BioProtect Plus™** supplies a wide spectrum of antioxidant nutrients to assist in the body's ability to "quench" free radicals, which can cause biological damage to cells. The overproduction of reactive oxygen species (ROS) and reactive nitrogen species (RNS) are common underlying mechanisms known to cause damage to several cellular components including proteins, lipids and DNA, which may potentially result in undesirable health consequences. Free radicals, especially superoxide, and non-radicals, such as hydrogen peroxide, can be generated in amounts that could overwhelm the endogenous protective enzyme systems. When free radicals or radical-generating agents are present in concentrations that overwhelm our natural radical-blocking/scavenging mechanisms, oxidative stress results, which deregulates cellular function.

It is well known that diet plays a major role in the production of inflammatory compounds. The Standard American Diet (SAD) is deficient in fruits and vegetables, resulting in low intake of antioxidant and phytochemical nutrients, as well as an imbalance of essential fatty acids. These nutritional deficits may result in the promotion of a systemic inflammatory state. Common laboratory markers include C-reactive protein (CRP), erythrocyte sedimentation rate (ESR), interleukin-6 (IL-6) and 8 (IL-8), rheumatoid factor (RF), tumor necrosis factor alpha (TNF-alpha), interferon gamma (IFN-gamma), anti-cyclic citrullinated peptide antibody (anti-CCP), and vascular endothelial growth factor (VEGF).



**BioProtect Plus™**  
available in a  
90 capsule  
bottle (#2802)

Cells inherently possess substances capable of scavenging free radicals. They include enzymatic antioxidants such as glutathione reductase (GR), glutathione peroxidase (GPx), catalase (CAT) and superoxide dismutase SOD, as well as non-enzymatic antioxidants such as glutathione (GSH), vitamin E, carotenoids, vitamin C, flavonoids and coenzyme Q10 (CoQ10).

**Vitamin A** plays key roles in immunity, detoxification, synthesis of various hormones and neurotransmitters, and the metabolism of certain amino acids and vitamins. Interestingly, one study demonstrates that low levels of vitamin A was correlated with a lower interleukin-10 (IL-10) status. IL-10 is a potent anti-inflammatory cytokine with numerous immunomodulatory effects, including the inhibition of pro-inflammatory cytokine production.<sup>1,2</sup>

**Vitamin C** or ascorbic acid, is a potent free radical scavenger. A powerful water-soluble antioxidant, vitamin C aids in protecting other naturally occurring antioxidants from oxidation, and plays a role in the modulation of the epigenetic control of genome activity. Along with vitamin E, vitamin C positively influences vascular function and structure.<sup>3</sup>



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**Vitamin D3** is both a fat-soluble vitamin and a hormone. Vitamin D acts to boost the glutathione redox system and therefore serves to increase antioxidant capacity. Based on the incredible amount of published research, the importance of maintaining sufficient vitamin D levels cannot be over stated, with many suggesting optimum 25(OH)D levels between 50 and 90 nmol/L.

**Vitamin E** is a fat-soluble vitamin that functions to scavenge both oxygen (O<sub>2</sub>) and hydroxyl (OH) radicals, and to interrupt lipid peroxidation.

**Vitamin K** has antioxidant properties via its action as a hydrogen and electron radical donor/acceptor, by virtue of its role in the facilitation of the "carboxylation of the peptide glutamyl residues of certain proteins to their epoxide form."<sup>4</sup>

**Zinc** is an important component in host defense and immunity. Thymulin, a thymus specific hormone which is required for the maturation of T-helper cells, requires zinc for activity. Deficiency has been associated with thymic atrophy and lymphoid tissue atrophy. Also, new protein production for tissue repair is a zinc dependent process, therefore zinc status is particularly important in tissue reformation, as seen in trauma and sepsis. Zinc deficiency has been demonstrated to negatively impact IFN- $\gamma$ , IL-2, and TNF- $\alpha$ , as well as decreased NK cell lytic activity, resulting in a decreased percentage of T cells.<sup>5</sup>

**Selenium**, an essential trace mineral, supports immune function, is a synergist to vitamin E, and is a co-factor for GPx, which functions as a coenzyme in a number of oxidation-reduction reactions. In men, selenium functions as a regulator of male hormones and supports healthy prostate function. Selenium and vitamin E play key roles in the detoxification of peroxides and free radicals, and is an essential element of the selenoproteins, whose reactions involve sulfur-containing amino acids and selenium, the most studied of which is GPx.

**Green Tea Extract** supplies beneficial polyphenols, most importantly its EGCG catechin. Possessing significant antioxidant activity, Green Tea extract has been documented to support healthy cognitive and cardiovascular function.<sup>6</sup>

**L-Methionine** is a sulfur containing essential amino acid. Sulfur protects cells from various pollutants. In the body, L-Methionine converts to cysteine, which functions as a precursor to GSH, a key neutralizer of liver toxins, as it is essential for both phase I and phase II liver detoxification systems. Methionine is also an excellent metal chelator.

**Taurine** is a non-essential amino acid that is biosynthesized from methionine or cysteine. Its functions include maintenance of the structural integrity of membranes, as well as regulating calcium binding and transport. It also functions as an osmolyte (a solute used to maintain cell volume), a neuro-modulator, a neurotransmitter and a neuroprotector against L-glutamate-induced neurotoxicity. Taurine also plays a role in the breakdown of homocysteine.

**N-Acetyl-L-Cysteine** (NAC) is a precursor of GSH synthesis, and stimulates enzymes involved in GSH regeneration. NAC also exhibits its own antioxidant properties, countering the effects of ROS and protecting mitochondrial proteins. NAC supplementation has been shown to improve mitochondrial energy production efficiency. Additionally, NAC plays a role in the development of the central nervous system, inhibition of genotoxicity and cell transformation, modulation of gene expression and signal transduction pathways, and inhibits NF-kappaB activation.

**Quercetin** is a flavonol, a class of flavonoids ubiquitous in foods of plant origin. Quercetin provides antioxidant activity and has demonstrated its ability to be protective of other antioxidant compounds.

**L-Glutathione** (GSH) functions as one of the most powerful intracellular antioxidants. It participates as an important component in detoxification via its reaction with hydrogen peroxide and organic peroxides, or other electrophilic compounds, and its ability to quench xenobiotics. The lymphoid cells of the immune system also require GSH for optimal function, and even modest changes in levels of intracellular GSH can result in profound effects on lymphocyte function. Severe GSH depletion in antigen presenting cells (APC) such as macrophages, dendritic cells and B lymphocytes, can result in a decrease in T-cell proliferation and cytokine production increases, resulting in decreased IFN- $\gamma$ , which impacts vital immunoregulatory function.

**Grape Seed Extract** is associated with many health benefits. It has been demonstrated to quench superoxide, and has also been shown to regulate the release of nitric oxide (NO). NO relaxes smooth muscle cells and may be supportive of improved endothelium-dependent vasodilation, which is important for vascular integrity.<sup>7</sup>

**Olive Fruit Extract** has demonstrated antioxidant and neuroprotective activity among others. A rich source of polyphenols and other beneficial compounds, such as secoiridoids (SID), and SID-1 (the dialdehydic form of oleuropein), olive’s constituents have demonstrated numerous health promoting properties.

**Coenzyme Q10** (emulsified for enhanced uptake and utilization) is an organic, ubiquitous nonprotein molecule in the cellular matrix. CoQ10 has two principal functions in the body: first to act in the transfer of electrons as a necessary part of mitochondrial ATP production (mitochondrial respiratory chain), and second, to function as an essential antioxidant. CoQ10 is essential in energy production, participating in all energy processes in the body. CoQ10 plays a vital role in the cellular membrane, functioning in its stability, fluidity and permeability. It also functions to block oxidative injury to DNA, lipids, proteins, and other essential molecules. CoQ10 is most known for its beneficial effect on cardiovascular health; however, is has also been demonstrated to be supportive of immune function as well.



BioProtect Plus™ available in a 90 capsule bottle (#2802).

Supplement Facts		
Serving Size: 3 Capsules		
Servings Per Container: 30		
	Amount Per Serving	% Daily Value
Vitamin A (as natural mixed carotenoids and acetate)	2,295 mcg RAE	255%
Vitamin C (ascorbic acid)	300 mg	333%
Vitamin D3 (as cholecalciferol)	25 mcg	125%
Vitamin E (d-alpha tocopheryl acetate and mixed tocopherols)	60 mg	400%
Vitamin K (as phytonadione)	80 mcg	67%
Zinc (as zinc gluconate)	15 mg	136%
Selenium (from vegetable culture †)	25 mcg	45%
Green Tea Extract (50% EGCG) (Camellia sinensis) (leaf)	200 mg	*
L-Methionine	90 mg	*
Taurine	90 mg	*
L-Cysteine HCl	90 mg	*
Quercetin	50 mg	*
L-Glutathione (reduced)	30 mg	*
Grape seed (Vitis vinifera) (extract) (95% OPCs)	30 mg	*
Olive (Olea europea) (fruit) (extract)	25 mg	*
Coenzyme Q10 (emulsified)	5 mg	*
* Daily Value not established		

**Other ingredients:** Capsule shell (gelatin and water) and magnesium stearate (vegetable source).

† Specially grown, biologically active vegetable culture (from organic peas, lentils and/or chickpeas) containing **Phytochemically Bound Selenium™** and other phytochemicals including polyphenolic compounds with SOD and catalase, dehydrated at low temperature to preserve associated enzyme factors.

**This product is gluten and dairy free.**

**RECOMMENDATION:** Three (3) capsules each day as a dietary supplement or as otherwise directed by a healthcare professional.

\*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.

## References

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