

TPP™ Antioxidant is formulated to control the free radicals that affect hydrophilic and hydrophobic moieties of various molecules. When oxidized, molecules lose their functionality and create a free radical “domino effect” in the system. This natural formulation incorporates specific antioxidant molecules that scavenge and correct the molecules that have been damaged by free radicals, including proteins, lipids, and other oxidized molecules found in the cytosol, extracellular environment, and lipophilic structures. Most metabolic disorders and degenerative diseases have at least some root in excess free radical damage of cells and vital membranes. **TPP™ Antioxidant** is designed to serve as both a preventative as well as a corrective product. Its benefits include the control of oxidized and glycosylated molecules, the improvement of cellular vitality, and the control of the aging process.

Tzyme™ is the trademark of a proprietary blend of highly active, functional enzymes. These enzymes are pH balanced and GI tract stable. This blend is formulated to enhance the digestive process and to impart systemic benefits.

Tzyme™ Protease Blend – This proprietary blend of highly active proteolytic enzymes has a wide range of pH stability. Proteolytic enzymes taken orally under certain conditions have been shown to be absorbed into the blood in substantial quantities^{1,2}. Once in circulation, the enzymes in this blend bind to serum proteins (most especially alpha 2-macroglobulin (α_2M)) and impart immunomodulatory benefits⁴. One of the most established functions that is served by the oral proteases in Tzyme™ blend is the maintenance of normal blood flow. This is accomplished as they break down blood clots (fibrinolysis)³ and platelet aggregation within blood vessels and as they break down excess extravascular plasma proteins (as in edema). In addition to these benefits, the proteases in Tzyme™ blends help to hydrolyze oxidized proteins, thus eliminating the free radical damage process.

Tzyme™ AntiOx Blend – The highly active antioxidants in this blend help to ensure the reduction of oxidized molecules in the system. The enzymes in this formulation that do the reducing include catalase, glutathione, and SOD as well as various sources of bioflavonoids, vitamin C, carotenoids, lipoic acid, and other potent antioxidants. The specific ingredients in this blend can help prevent and correct free radicals within aqueous and lipophilic environments.

INDICATIONS:

SCAVENGER OF OXIDIZED AND DAMAGED PROTEINS

Oxidative reactions generate free radical damage to various molecules, including proteins. Free radicals have been implicated as important factors in the acceleration of the aging process as well as in the acceleration of the development of several diseases, including diabetes, arteriosclerosis, and neurodegenerative conditions⁵. With proper nutrition and with adequate antioxidant enzyme activity, the free radical damage is minimized. In many instances, however, the body is overwhelmed by the load of pro-oxidants (free radical generating molecules), which results in oxidative stress conditions.

One of the consequences of oxidative stress is the formation of oxidized proteins. Oxidized proteins often lose their function, become inactive, and undergo an unfolding or a conformational change of their structure that enhances their

SUPPLEMENT FACTS

Serving Size 1 Capsule

Amount Per Serving	% Daily Value	
Vitamin A (100% as beta carotene)	10,890 IU	218%
Vitamin C	18 mg	30%
Vitamin E	53 IU	177%
Magnesium	8 mg	<2%
Zinc	3.5 mg	23%
Selenium	20 mcg	29%
Tzyme™ AntiOx Blend (Beta carotene/ mixed carotenoids, Vitamin E succinate, SOD, Grape seed extract, Mg. ascorbate, Tumeric powder, L-glutathione, Lipoic acid, Zinc citrate, Citrus Bioflavonoids, Quercetin, Rose hips, Catalase, Rutin, Selenium citrate, Korean Ginseng root, CoQ10, Gingko biloba leaf, Green tea extract, Hesperidin, Lutein, Lycopenes, Flaxseed, Gingko biloba leaf extract)	348 mg	*
Tzyme™ Protease Blend (acid, neutral, alkaline exo/endo peptidases, bromelain, and papain) (66,044 HUT) (981,600 PU)	130 mg	*
Tzyme™ Polysaccharolytic Blend	60 mg	*
Amylase	4,194 DU	*
Glucoamylase	3.4 AGU	*
Alpha galactosidase	53.4 Gal U	*
Malt diastase	50 DP°	*
Invertase	17 SU	*
Lactase	168 ALU	*
Lysozyme	17 MCG	*
Lipase	50 IU	*

* Daily Value not established

Other ingredients: Vegetarian Capsules (cellulose & water)
Enzyme activity is measured in Food Chemical Codex (FCC) units.
Store tightly sealed in a cool, dry place. Keep out of reach of children.

susceptibility to proteolysis^{6,7}. For instance, oxidized proteins in the blood and extracellular fluid include hormones, immune system proteins, transport proteins, and other proteins that are needed at various cellular locations.

As these oxidized proteins lose their biological function^{6,7}, they may not be able to carry out the cellular tasks and biochemical reactions that they are meant to perform. For instance, an oxidized hormone may not be able to attach to its receptor on the cell surface. Likewise, an oxidized enzyme may not perform its activity. Further, an oxidized antibody molecule will not bind to its antigen.

Oxidative reactions occur in a cascade-like manner. Therefore, the oxidation of one protein may lead to further oxidation reactions within the same molecule and/or within other molecules. This amplifies the damaging effect. Thus, any oxidation of a protein, if not corrected, may result in the impairment of biochemical functions that are of vital importance to cellular viability. In order to avoid the cascade effect, oxidized proteins may be either reduced by an antioxidant or removed by proteolysis. Several studies have indicated that oral proteases that are bound to the α 2-macroglobulin will hydrolyze various immune complexes, proteinaceous debris, damaged proteins, and acute phase plasma proteins in the blood stream^{6,8}. Oral proteases may thus help hydrolyze and remove extracellular proteins damaged by free radicals that are especially susceptible to proteolysis, as mentioned above.

CELLULAR DAMAGE

Cellular membranes are composed of proteins and lipids (principally phospholipids and cholesterol) in the form of a lipid bilayer. For the cellular membrane to support all of its necessary functions, it must have a well defined "fluidity." This fluidity depends, in turn, upon the appropriate degree of unsaturation in the fatty acids of the phospholipids. These unsaturated fatty acids are susceptible to oxidative attack and therefore must be defended by cellular antioxidants.

PREMATURE AGING

The signs and symptoms of aging appear at an accelerated pace in individuals who are exposed to a highly oxidative environment. This is most clearly seen when the symptoms are externally visible, as with the premature aging of the skin when it is overexposed to excess sunlight (an oxidative environment).

RECOMMENDED DOSAGE:

Take one (1) capsule two (2) times daily on an empty stomach with 8 oz. of water. If you have difficulty swallowing capsules, then remove contents from capsule, mix with a small amount of tepid water, and ingest immediately.

Dosage may be increased as indicated by your health care professional.

Available in bottles of 60 capsules.

TPP™ Antioxidant should be taken in addition to:

TPP™ Digest

TPP™ Probiotic

TPP™ Protease

REFERENCES:

1. Absorption of Orally Administered Enzymes. M.L.G. Gardner and K.-J. Steffens, eds. Springer-Verlag, Berlin, 1995.
2. Castell J.V., Friedrich G., Kuhn C.-S. & Poppe G.E. "Intestinal absorption of undegraded proteins in men: presence of bromelain in plasma after oral intake." *Am J Physiol.*1997; 273: G139-G146.
3. Larsson L.J.; Frisch E.P.; Torneke K.; Lindblom T. & Bjork I. "Properties of the complex between alpha 2-macroglobulin and brinase, a proteinase from *Aspergillus oryzae* with thrombolytic effect." *Thromb Res* 1988; 49: 55-68.
4. Nouza K. "Outlooks of systemic enzyme therapy in rheumatoid arthritis and other immunopathological diseases." *Acta Univ Carol [Med]* 1994; 40: 101-4.
5. Dean, R.J, Shanlin, FU, Stocker, R., and Davies, M. "Biochemistry and pathology of radical mediated protein oxidation." *Biochem. J.* 1997; 324: 1-18
6. Grune, T., Reinheckel, T., Davies. K.J.A. "Degradation of oxidized proteins in mammalian cells." *FASEBJ.*, 1997; 11: 526-534
7. Trevanil, A., Andonegui, GA, Isturiz, MA, et al. "Effect of proteolytic enzymes on neutrophil FcyRII activity." *Immunology* 1994; 82: 632-637
8. Hills, J.M. and Aaronson, P.I. "The Mechanism of action of peppermint oil in gastrointestinal smooth muscle." *Gastroenterol.* 1991; 101: 55-65.

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