



## ANTIOXIDANT SYSTEMS



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 **VitaeNaturals**  
MANUFACTURERS OF WELLNESS

# ANTIOXIDANT SYSTEMS

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The main aim of Vitae Naturals is maximizing effectiveness in oxidation prevention, and for this reason we are developing a range of antioxidant synergists which consists of primary and secondary antioxidants with chelating agents to avoid the oxidation problems of the food industry. Vitae Naturals' assay is focused on preventing oxidation and degradation of vegetable oils, fish oils rich in Omega 3, animal fats, etc.

Foodstuffs, nutraceutical and cosmetical preparations are composed of a wide variety of ingredients, many of which contain lipid substances, such as fats process and oils from vegetable or animal origin. These components are quite sensible to oxidation processes and they get rancid easily, thereby affecting not only the organoleptic properties (colour, odour, and flavour), but also nutritive value or even safety of the finished product.

Oxidative rancidity is a consequence of polyunsaturated fatty acids oxidation, and first compounds generated from primary oxidation are hydroperoxides, which polymerize and decompose forming secondary oxidation products such as aldehydes, ketones and acids with less molecular weight. This process is accelerated under specific conditions as light, temperature, humidity and the presence of cupric and ferric traces as inorganic catalysts.

## Antioxidants are classified in:

- **Primary antioxidants** (tocopherols and synthetic antioxidants) act during the whole oxidative process and their antioxidant capacity is explained by their molecular structure with substitution positions since they are capable of donating a single electron or hydrogen atom to free radicals. Furthermore, antioxidants scavenge lipid peroxide radicals and generate a lipid-antioxidant complex.
- **Secondary antioxidants** (citric acid, rosemary extract, ascorbic acid, ascorbyl palmitate) enhance shelf life of primary antioxidants and their activity by means of regeneration of one by other.

By combining different types of antioxidants, the efficacy of individual compounds can be greatly increased and synergy occurs.

Mixed tocopherols are considered natural antioxidants par excellence. They work in two different ways:

- Preventing autoxidation process by reducing the rate of chain initiation.
- Extending induction period and reducing oxidation rate.

Other compounds of **Antioxidant Systems** are:

- Ascorbyl palmitate is a powerful oxygen scavenger.
- Rosemary extract is a free radical scavenger.
- Citric acid sequesters heavy metals.
- Lecithin regenerates tocopherols.

Vitae Naturals develops tailor-made formulations according to R&D department experience with natural antioxidants like mixed tocopherols (**Vitapherole®**) and secondary antioxidants.

## Antioxidant Systems' formulations

- Powder formulations for meat applications.
- Oil formulations to stabilize fish oils, animal fats, fats and mixed oils and fat spreads.

Vitae Naturals evaluates its **Antioxidant Systems** in customer's fats and oils doing several tests, including "Rancimat" measurement. Thus, we can offer to the customer the most suitable synergic agent to avoid oxidation.

Vitae Naturals' **Antioxidant Systems** prevent and slow down oxidation process in fats and foodstuffs. Our antioxidant systems are made of natural products in order to offer to the food market a healthy product. Different applications need different solutions and Vitae Naturals works close to the customer.

Vitae Naturals products meet customers' requirements and have the following properties:

- Safety and harmlessness.
- Quantity added does not affect either colour, smell or flavour in final product.
- Effectiveness in low concentration.
- Cost-effective.
- Optimum performance from initial stages of oxidation mechanism.
- Non GMO/IP.
- Permitted additive according to European Regulation.