



# Natural Antioxidants For Food Applications

Consumers are demanding 'cleaner' labels whilst retailers demand longer shelf lives. The use of natural antioxidants such as tocopherols and rosemary extracts can solve these problems simultaneously.

## TOCOPHEROL

### Vitamin E and its homologues.

Natural tocopherol is not a single substance but is a mixture of 8 forms (homologues) namely, Alpha ( $\alpha$ ), Beta ( $\beta$ ), Gamma ( $\gamma$ ) and Delta ( $\delta$ ) Tocopherol and 4 tocotrienol homologues ( $\gamma$ ,  $\delta$ ,  $\beta$ ,  $\alpha$ ). There are in fact a total of 8 homologues of vitamin E and choosing the right tocopherol for your application is important. Tocopherol can be used as a vitamin or as an antioxidant.

The 'In vitro' or antioxidant potency of tocopherol is in the order **delta > gamma > beta > alpha**

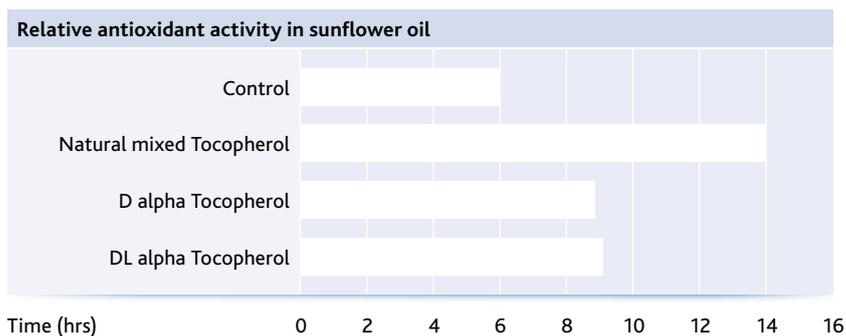
As a result tocopherols high in delta and gamma tocopherol are preferred for antioxidant activity in fats and oils. Alpha tocopherols however, have superior vitamin E potency.

Vitablend provides both high alpha tocopherol products in various forms for in vivo and fortification use in foods and natural mixed tocopherol (Tocoblend®) high in delta and gamma homologues for stabilising fats and oils.

### Natural mixed tocopherols

Natural mixed tocopherols are extracted from vegetable oils and are suitable for the stabilisation of food products that contain fat and oil susceptible to rancidity.

In a simple rancimat test (testing oxidative stability of oils) a mixed tocopherol was seen to be nearly twice as effective at preventing oxidation developing than a single alpha tocopherol.



(Source Vitablend 2007©)

Vitablend markets natural mixed tocopherols under the brand name Tocoblend® and is available as either a free-flowing powder form or as easy to pour liquids. Applications include oils and fats, essential oils, mayonnaise, baked products, infant milk formula and other food applications where a more natural antioxidant is a preference to the use of synthetics.

### Labelling and GM.

As soya is the preferred source it is important to source mixed tocopherols that are non-gm and IP certification is the best way to certify this. Tocoblend® is available as IP (identity preserved) ensuring confidence in all stages of use that the material is not of GM origin.

True mixed tocopherols from soya oil, E306, as offered with Tocoblend® are also permanently exempt from allergen declaration.

## VITABLEND ROSEMARY EXTRACTS

### Rosemary extracts in the Food Industry

Rosemary extracts are produced from the rosemary plant *Rosmarinus officinalis* with subsequent extraction and standardisation ensuring consistency of quality. It is the phenolic compounds extracted from rosemary that are responsible for the antioxidant property of this plant.

The antioxidant capacity of rosemary extracts is based on their content of phenolic diterpenes which are fat soluble, notably carnosic acid and carnosol. These diterpenes can be further oxidized on exposure to elevated temperatures, however their capability to prevent oxidation is maintained. The oxidation products formed are active and can protect oils during frying and have carry-over activity into the fried goods. This means rosemary extracts can prevent oxidation after frying.

Rosemary also liberates a water soluble extract, rosmarinic acid which is also widely used in the food industry.

## Why use Rosemary Extract?

Being derived from a natural source the unrefined rosemary extracts offer effective antioxidant properties whilst still retaining a natural label.

Rosemary extract is stable up to 200°C and is one of the most heat resistant antioxidants, retaining all its antioxidant properties up to this temperature.

## Unrefined Rosemary extracts

The unrefined rosemary extracts retain the colour and aroma of rosemary, which in many cases is desired. They maintain a high complement of the active phenolic compounds at 20 - 22% in the RE form and importantly the high content of carnosic acid within these.

The liquid version Rosemary unrefined liquid is a 15% dilution of the unrefined powder.

## Refined Rosemary extracts

In certain applications the incorporation of an unrefined rosemary extract may be undesirable possibly due to the colour or the odour it may have. By refining the rosemary extracts we can now provide an odourless amber liquid or pale brown powder. However there is no loss of the all-important phenolics, the "work horses" for antioxidant and colour protection.

Rosemary refined liquid for example is the best demonstration of a refined rosemary extract. It is water dispersible and oil soluble and doesn't produce a glaze or taste.

## Main Features

**Heat Stability** - up to 200°C, one of the most heat stable antioxidants. Rosemary extracts retain all their active phenolics at this temperature.

### Natural

**Labelling** - Natural and therefore no E number with advantages on labelling finished foods containing rosemary. There is a review currently to consider whether the refined rosemary extracts will have an E-number in the future when used as an antioxidant. They may be currently declared on food labels as rosemary extract or spice.

Applications include prepared meats & poultry, potato products, natural colour protection, frying oils and salad dressings.

Vitablend Nederland B.V.  
Phone +31 (0) 561 69 18 88  
info@vitablend.nl  
www.vitablend.nl

Vitablend S.A.S  
Phone +33 (0)3 28 53 58 19  
info@vitablend.fr  
www.vitablend.fr

Vitablend Ltd.  
Phone +44 (161) 435 6007  
info@vitablend.co.uk  
www.vitablend.co.uk

Vitablend Deutschland  
Phone +49 (69) 67733 130  
info@vitablend.de  
www.vitablend.de