

## PRODUCT DATA SHEET

### (+)-delta-Tocopherol

**Catalog No:** 1790

**Common Name:** 8-Methyltolcol

**Source:** natural, plant

**Solubility:** chloroform, methanol, hexane

**CAS No:** 119-13-1

**Molecular Formula:** C<sub>27</sub>H<sub>46</sub>O<sub>2</sub>

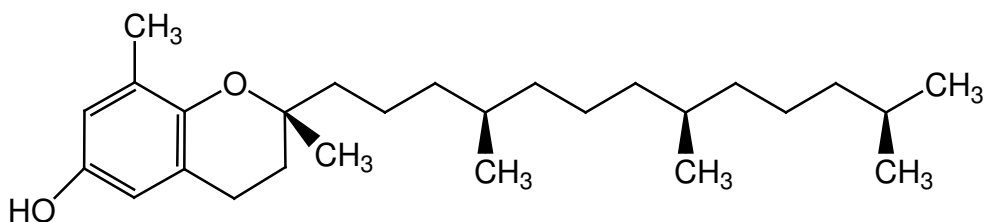
**Molecular Weight:** 403

**Storage:** -20°C

**Purity:** TLC > 95%, GC > 98%, HPLC > 98%; identity confirmed by MS

**TLC System:** chloroform/methanol  
(97:3 by vol.)

**Appearance:** liquid



### **Application Notes:**

*delta*-Tocopherol is one of the forms of vitamin E and in animal tissues has been found to have much less retention than *alpha*-tocopherol.<sup>1</sup> Due to its having only one methyl group *meta* to the phenolic hydroxyl group and no *ortho*-methyl groups, *delta*-tocopherol has much less antioxidant activity *in vivo* than *alpha*-tocopherol which has two *ortho*-methyl groups and a *meta*-methyl group. Vitamin E is involved in immune function, cell signaling, regulation of gene expression, and other metabolic processes. Vitamin E also inhibits lipid oxidation by donating its phenolic hydrogen to lipid free radicals.<sup>2</sup> Antioxidant activity *in vivo* is normally *alpha*>*beta*>*gamma*>*delta* but the antioxidant potency may depend on various chemical and physical situations.<sup>3</sup> The *ortho*-methyl substitution of the chromanol head plays a vital role in the antioxidant activity of tocopherols while the phytyl tail is very important for proper positioning in the biomembranes. The antioxidant properties of vitamin E may delay memory loss in Down's syndrome patients due to their protection from harmful oxidation caused by excess activity of Superoxide dismutase. Vitamin E is only naturally produced in plants, algae, and some cyanobacteria and is therefore an important dietary nutrient for humans and animals.

### **Selected References:**

1. S. Chiku, K. Hamamura and T. Nakamura "Novel urinary metabolite of d-*delta*-tocopherol in rats" *Journal of Lipid Research*, Vol. 25 pp. 40-48, 1984
2. G. W. Burton and K. Ingold Autoxidation of biological molecules. 1. Antioxidant activity of vitamin E and related chain-breaking phenolic antioxidants *in vitro*, U. J. Am. Chem. Soc., 103, 6472-6477, 1981
3. Anchalee Sirikhachornkit, Jai W. Shin, Irene Baroli, and Krishna K. Niyogi Replacement of *alpha*-tocopherol by *beta*-tocopherol enhances resistance to photo-oxidative stress in a xanthophyll-deficient strain of *Chlamydomonas reinhardtii*, *Eukaryotic Cell*, doi:10.1128, 2009

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