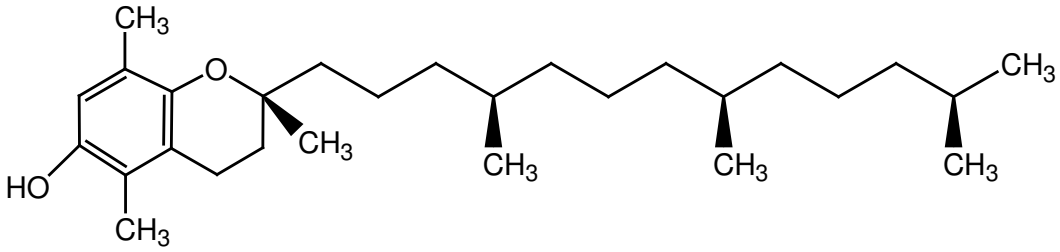
MATREYA LLC
Lipids and Biochemicals
2178 High Tech Road, State College, PA 16803
Tel. 814-355-1030 Fax 814-355-1031 www.matreya.com

PRODUCT DATA SHEET

rac-beta-Tocopherol

Catalog number: 1071
Common Name: 5,8-Dimethyltocol
Source: synthetic
Solubility: chloroform, ethanol, hexane, methanol
CAS No: 148-03-8
Molecular Formula: $C_{28}H_{48}O_2$
Molecular Weight: 417

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:

beta-tocopherol is one of the forms of vitamin E, which is well known for its antioxidant activity.[1,2] *beta*-tocopherol, due to its having only one methyl group *ortho* to the phenolic hydroxyl group, has slightly less antioxidant activity *in vivo* than *alpha*-tocopherol which has two *ortho*-methyl groups. Vitamin E inhibits lipid oxidation by donating its phenolic hydrogen to lipid free radicals.[3] Antioxidant activity *in vivo* is normally *alpha>beta>delta>gamma* but the antioxidant potency may depend on various chemical and physical situations.[4] The *ortho*-methyl substitution of the chroman 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. Afaf Kamal-Eldin and Lars-Ake Appelqvist The chemistry and antioxidant properties of tocopherols and tocotrienols, Lipids, July; 31 (7): 671-701, *1996*
2. G. W. Burton, and M. G. Traber Vitamin E: Antioxidant Activity, Biokinetics, and Bioavailability, Annual Review of Nutrition, July Vol. 10: 357-382, *1990*
3. 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*
4. 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*

This product is to be used for research only. It is not intended for drug or diagnostic use, human consumption or to be used in food or food additives. Matreya assumes no liability for any use of this product by the end user. We believe the information, offered in good faith, is accurate.