

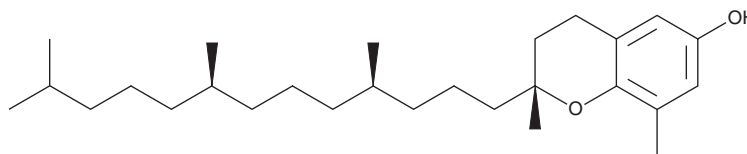
# PRODUCT INFORMATION



## (+)- $\delta$ -Tocopherol

Item No. 31589

**CAS Registry No.:** 119-13-1  
**Formal Name:** (2R)-3,4-dihydro-2,8-dimethyl-2-  
[[4R,8R)-4,8,12-trimethyltridecyl]-  
2H-1-benzopyran-6-ol  
**Synonym:** D- $\delta$ -Tocopherol  
**MF:** C<sub>27</sub>H<sub>46</sub>O<sub>2</sub>  
**FW:** 402.7  
**Purity:**  $\geq$ 98%  
**Supplied as:** A solution in hexane  
**Storage:** -20°C  
**Stability:**  $\geq$ 2 years  
**Item Origin:** Plant/Unidentified sp.



Information represents the product specifications. Batch specific analytical results are provided on each certificate of analysis.

### Laboratory Procedures

(+)- $\delta$ -Tocopherol is supplied as a solution in hexane. To change the solvent, simply evaporate the hexane under a gentle stream of nitrogen and immediately add the solvent of choice. (+)- $\delta$ -Tocopherol is soluble in ethanol, methanol, and chloroform.

### Description

(+)- $\delta$ -Tocopherol is a biologically active form of vitamin E, a lipid-soluble antioxidant that protects cellular membranes from oxidative damage.<sup>1,2</sup> It reduces cumene hydroperoxide-induced lipid peroxidation in hepatocytes when used at a concentration of 20  $\mu$ M but induces lipid peroxidation in hepatic microsomes at 100  $\mu$ M.<sup>3</sup> (+)- $\delta$ -Tocopherol (40  $\mu$ M) decreases capillary formation of HMEC-1 blood endothelial cells.<sup>4</sup> It also decreases the expression of VCAM in, and the invasiveness of, HMEC-1 cells. (+)- $\delta$ -Tocopherol (10  $\mu$ M) reduces estrogen-induced increases in the expression of the estrogen-responsive genes encoding TFF/pS2, cathepsin D, PGR, CITED1, and SERPINA1 and the levels of 8-hydroxy-2'-deoxyguanosine (8-oxo-dG) and nitrotyrosine in MCF-7 breast cancer cells.<sup>5</sup> Dietary administration of (+)- $\delta$ -tocopherol (0.2%) reduces tumor growth in an estrogen-supplemented MCF-7 mouse xenograft model.

### References

1. Brigelius-Flohé, R. and Traber, M.G. Vitamin E: Function and metabolism. *FASEB J.* **13(10)**, 1145-1155 (1999).
2. van Acker, F.A., Schouten, O., Haenen, G.R., et al. Flavonoids can replace  $\alpha$ -tocopherol as an antioxidant. *FEBS Letters* **473(2)**, 145-148 (2000).
3. Tafazoli, S., Wright, J.S., and O'Brien, P.J. Prooxidant and antioxidant activity of vitamin E analogues and troglitazone. *Chem. Res. Toxicol.* **18(10)**, 1567-74 (2005).
4. Wells, S.R., Jennings, M.H., Rome, C., et al.  $\alpha$ -,  $\gamma$ - and  $\delta$ -tocopherols reduce inflammatory angiogenesis in human microvascular endothelial cells. *J. Nutr. Biochem.* **21(7)**, 589-97 (2010).
5. Bak, M.J., Gupta, S.D., Wahler, J., et al. Inhibitory effects of  $\gamma$ - and  $\delta$ -tocopherols on estrogen-stimulated breast cancer *in vitro* and *in vivo*. *Cancer Prev. Res. (Phila)* **10(3)**, 188-197 (2017).

#### WARNING

THIS PRODUCT IS FOR RESEARCH ONLY - NOT FOR HUMAN OR VETERINARY DIAGNOSTIC OR THERAPEUTIC USE.

#### SAFETY DATA

This material should be considered hazardous until further information becomes available. Do not ingest, inhale, get in eyes, on skin, or on clothing. Wash thoroughly after handling. Before use, the user must review the complete Safety Data Sheet, which has been sent via email to your institution.

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