

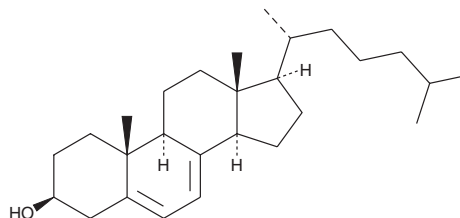
# PRODUCT INFORMATION



## 7-dehydro Cholesterol

Item No. 14612

**CAS Registry No.:** 434-16-2  
**Formal Name:** cholesta-5,7-dien-3 $\beta$ -ol  
**Synonyms:**  $\Delta^7$ -Cholesterol, 7-DHC, NSC 18159, Provitamin D<sub>3</sub>  
**MF:** C<sub>27</sub>H<sub>44</sub>O  
**FW:** 384.6  
**Purity:**  $\geq 90\%$   
**UV/Vis.:**  $\lambda_{\text{max}}$ : 271, 282, 293 nm  
**Supplied as:** A crystalline solid  
**Storage:** -20°C  
**Stability:**  $\geq 4$  years



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

### Laboratory Procedures

7-dehydro cholesterol (7-DHC) is supplied as a crystalline solid. A stock solution may be made by dissolving the 7-DHC in the solvent of choice. 7-DHC is soluble in organic solvents such as ethanol, DMSO, and dimethyl formamide, which should be purged with an inert gas. The solubility of 7-DHC in these solvents is approximately 20, 0.1, and 2 mg/ml, respectively.

7-DHC is sparingly soluble in aqueous buffers. For maximum solubility in aqueous buffers, 7-DHC should first be dissolved in ethanol and then diluted with the aqueous buffer of choice. 7-DHC has a solubility of approximately 0.3 mg/ml in a 1:2 solution of ethanol:PBS (pH 7.2) using this method. We do not recommend storing the aqueous solution for more than one day.

### Description

7-DHC is an immediate precursor of cholesterol.<sup>1</sup> It is reduced to cholesterol by the enzyme 3 $\beta$ -hydroxysterol- $\Delta^7$ -reductase (DHCR7) in the last step of cholesterol biosynthesis. 7-DHC accumulates in Smith-Lemli-Opitz syndrome (SLOS), a disorder characterized by a mutation in the *DHCR7* gene and decreased cholesterol levels in bodily tissues and fluids, as well as microcephaly, intellectual disability, and distinctive dysmorphic features.<sup>1,2</sup> It is highly susceptible to free radical oxidation, giving rise to several oxysterols that may be involved in the pathogenesis of SLOS.<sup>1</sup> 7-DHC levels are increased in brain, liver, and serum in a rat model of SLOS induced by the DHCR7 inhibitor AY 9944 (Item No. 14611).<sup>1</sup> 7-DHC is a provitamin that is converted to vitamin D<sub>3</sub> (Item No. 11792) by ultraviolet-B (UVB) light in a human skin equivalent system and in isolated human skin samples.<sup>3,4</sup>

### References

1. Xu, L., Liu, W., Sheflin, L.G., *et al.* Novel oxysterols observed in tissues and fluids of AY9944-treated rats: A model for Smith-Lemli-Opitz syndrome. *J. Lipid Res.* **52**, 1810-1820 (2011).
2. Xu, G., Salen, G., Shefer, S., *et al.* Reproducing abnormal cholesterol biosynthesis as seen in the Smith-Lemli-Opitz syndrome by inhibiting the conversion of 7-dehydrocholesterol to cholesterol in rats. *J. Clin. Invest.* **95**(1), 76-81 (1995).
3. Lehmann, B., Genehr, T., Knuschke, P., *et al.* UVB-induced conversion of 7-dehydrocholesterol to 1 $\alpha$ ,25-dihydroxyvitamin D<sub>3</sub> in an *in vitro* human skin equivalent model. *J. Invest. Dermatol.* **117**(5), 1179-1185 (2001).
4. Chen, T.C., Chimeh, F., Lu, Z., *et al.* Factors that influence the cutaneous synthesis and dietary sources of vitamin D. *Arch. Biochem. Biophys.* **460**(2), 213-217 (2007).

#### 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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