

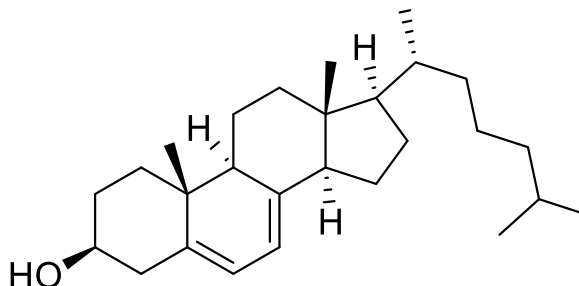
7-Dehydrocholesterol (7-DHC)

Catalog number: L-6004

Molecular Formula: C₂₇H₄₄O

MW: 384.65

CAS#: 434-16-2



Alternate Names: (3S,9S,10R,13R,14R,17R)-10,13-dimethyl-17-((R)-6-methylheptan-2-yl)-2,3,4,9,10,11,12,13,14,15,16,17-dodecahydro-1H-cyclopenta[a]phenanthren-3-ol,

Solubility: ~200 mg/mL chloroform, 20 mg/mL ethanol

Storage and Handling: Store at – 20 °C. Stock solution should be stored frozen (–20°C or below).

Background: 7-Dehydrocholesterol (7-DHC) is an endogenous sterol that serves as a precursor to both cholesterol, through the enzyme 7-dehydrocholesterol reductase (DHCR7), and vitamin D3 by exposure to UVB radiation. Mutations in the DHCR7 gene can lead to the genetic disorder Smith-Lemli-Opitz Syndrome (SLOS). Substituting sterols for cholesterol in lipid nanoparticle (LNP) formulations can influence morphology, internal structure, and endosomal escape. These analogs can result in substantial increases in gene delivery via LNPs.

References:

- 1) J. A. MacLaughlin *et al.*, "Spectral Character of Sunlight Modulates Photosynthesis of Previtamin D₃ and Its Photoisomers in Human Skin." *Science* 1982, 216,1001-1003.
- 2) Wassif CA, Maslen C, Kachilele-Linjewile S, Lin D, Linck LM, Connor WE, et al. "Mutations in the human sterol delta7-reductase gene at 11q12-13 cause Smith-Lemli-Opitz syndrome". *American Journal of Human Genetics*. 1988, 63 (1): 55–62.
- 3) M. Herrera et al, "Illuminating endosomal escape of polymorphic lipid nanoparticles that boost mRNA delivery" *Biomaterials Science*, 2021, 9:4289-4300
- 4) S. Patel et al, "Naturally-occurring cholesterol analogues in lipid nanoparticles induce polymorphic shape and enhance intracellular delivery of mRNA" *Nature communication*, 2020, 11, 983

Hazardous Properties and Cautions: The toxicological and pharmacological properties of this compound are not fully known. For further information see the MSDS on request. This product is manufactured and shipped only in small quantities, intended for research and development in a laboratory utilizing prudent procedures for handling chemicals of unknown toxicity, under the supervision of persons technically qualified to evaluate potential risks and authorized to enforce appropriate health and safety measures. As with all research chemicals, precautions should be taken to avoid unnecessary exposures or risks.

Warranty and Disclaimer: Echelon warrants the product conforms to the specifications stated herein. In the event of nonconformity, Echelon will replace products or refund purchase price, at its sole option, and Echelon shall not be responsible for any other loss or damage, whether known or foreseeable to Echelon. No other warranties apply, express or implied, including but not limited to warranty of fitness for any purpose or implied warranty of merchantability. Purchaser is solely responsible for all consequences of its use of the product and Echelon assumes no responsibility therefore, including success of purchaser's research and development, or health or safety of any uses of the product.

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