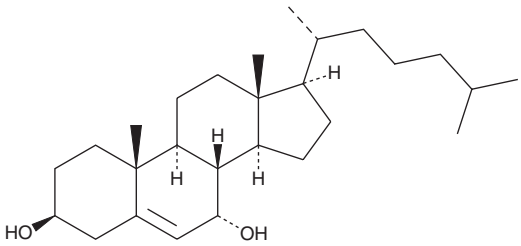
PRODUCT INFORMATION

7α-hydroxy Cholesterol

Item No. 20098

CAS Registry No.:	566-26-7
Formal Name:	cholest-5-ene-3β,7α-diol
MF:	$C_{27}H_{46}O_2$
FW:	402.7
Purity:	≥98%
Supplied as:	A crystalline solid
Storage:	-20°C
Stability:	≥2 years



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

Laboratory Procedures

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

7α-hydroxy Cholesterol is sparingly soluble in aqueous buffers. For maximum solubility in aqueous buffers, 7α-hydroxy cholesterol should first be dissolved in ethanol and then diluted with the aqueous buffer of choice. 7α-hydroxy Cholesterol 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

7α-hydroxy Cholesterol is an oxysterol and a precursor in the biosynthesis of the bile acids cholic acid (CA; Item No. 20250) and chenodeoxycholic acid (CDCA; Item No. 10011286).[1,2] It is formed *via* the oxidation of cholesterol (Item No. 9003100) by cholesterol 7α-hydroxylase/CYP7A1 in rat liver microsomes.[1] 7α-hydroxy Cholesterol (40 µM) increases levels of the adhesion molecules ICAM-1, VCAM-1, and E-selectin in human umbilical vein endothelial cells (HUVECs).[3] It increases secretion of chemokine (C-C motif) ligand 2 (CCL2) and matrix metalloproteinase-9 (MMP-9) in serum-deprived THP-1 cells when used at a concentration of 5 µg/ml.[4] 7α-hydroxy Cholesterol has been found in macrophages isolated from atherosclerotic lesions in rabbits fed a high-cholesterol diet.[5]

References

1. Mitropoulos, K.A. and Balasubramaniam, S. Cholesterol 7α-hydroxylase in rat liver microsomal preparations. *Biochem. J.* **128(1)**, 1-9 (1972).
2. Chiang, J.Y.L. Bile acid metabolism and signaling in liver disease and therapy. *Liver Res.* **1(1)**, 3-9 (2017).
3. Lemaire, S., Lizard, G., Monier, S., *et al.* Different patterns of IL-1β secretion, adhesion molecule expression and apoptosis induction in human endothelial cells treated with 7α-, 7β-hydroxycholesterol, or 7-ketocholesterol. *FEBS Lett.* **440(3)**, 434-439 (1998).
4. Kim, S.M., Kim, B.Y., Son, Y., *et al.* 7α-Hydroxycholesterol induces inflammation by enhancing production of chemokine (C-C motif) ligand 2. *Biochem. Biophys. Res. Commun.* **467(4)**, 879-884 (2015).
5. Hultén, L.M., Lindmark, H., Diczfalusy, U., *et al.* Oxysterols present in atherosclerotic tissue decrease the expression of lipoprotein lipase messenger RNA in human monocyte-derived macrophages. *J. Clin. Invest.* **97(2)**, 461-468 (1996).

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