7-keto Cholesterol
Item No. 16339

CAS Registry No.: 566-28-9
Formal Name: 3β-hydroxy-cholest-5-en-7-one
Synonyms: Δ^5-Cholesterol-3β-ol-7-one, 7-oxo Cholesterol, SC-4722
MF: C_{27}H_{44}O_{2}
FW: 400.6
Purity: ≥98%
UV/Vis.: \( \lambda_{max} \): 238 nm
Supplied as: A crystalline solid
Storage: -20°C
Stability: ≥4 years

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

Laboratory Procedures

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

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

7-keto Cholesterol is a bioactive sterol and a major oxysterol component of oxidized LDL.\(^1,2\) It is produced by oxidation of cholesterol via ethanol-mediated lipid peroxidation or photodamage as well as oxidation of 7-dehydro cholesterol (Item No. 14612) by the cytochrome P450 (CYP) isofonn CYP7A1.\(^3-5\) 7-keto Cholesterol inhibits CYP7A1 (IC_{50} = ~1 \mu M).\(^6\) It induces activation and chemotaxis of retinal microglia as well as polarization to a pro-inflammatory state via NLRP3 inflammasome activation \( \text{in vitro} \).\(^6\) Intracocular implantation of 7-keto cholesterol coated wafers increases ocular levels of VEGF, IL-1β, and GRO/KC, macrophage infiltration, and neovascularization in rat eye.\(^7\) Levels of 7-keto cholesterol in lipid deposits are increased in a variety of chronic diseases, including atherosclerosis, Alzheimer’s disease, and age-related macular degeneration.

References