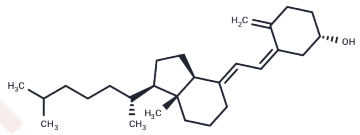
Data Sheet (Cat.No.T1135)

TargetMol

Vitamin D3

Chemical Properties



CAS No. : 67-97-0

Formula: C27H44O

Molecular Weight: 384.64

Storage: Keep away from direct sunlight,The compound is unstable in solution. Please use soon
Powder: -20°C for 3 years
Actual storage temperature shall be subject to the COA.

Biological Description

Description	Vitamin D3 (cholecalciferol) is a naturally occurring form of vitamin D; once metabolically activated, it can induce cellular differentiation and cancer cell proliferation. Vitamin D3 can be used to establish kidney stone models and is also an important research target in the fields of immunology and oncology.
Targets(IC50)	Endogenous Metabolite,Antibacterial,Vitamin
In vitro	**Methods**: IK, RL95/2, and HEC1-A cells were treated with 2–10 μM vitamin D3 for 24, 48, or 72 hours, and cell viability was assessed using the MTT assay. **Results**: Vitamin D3 inhibited cell viability in a dose- and time-dependent manner, with the strongest inhibitory effect observed after 72 hours of treatment with 10 μM vitamin D3.[1] **Methods**: IK cells were treated with 10 μM vitamin D3 for 0–48 h. Intracellular 25(OH)D levels were measured using chemiluminescence, and VDR nuclear translocation was assessed by immunofluorescence and Western blot. **Results**: Vitamin D3 treatment for 48 h was required to detect 25(OH)D production, accompanied by VDR nuclear translocation.[1]
In vivo	**Methods**: Male ddY mice were divided into 4 groups (solvent control, Vitamin D3 alone, CCl_4 alone, Vitamin D3 + CCl_4). Mice were pretreated with Vitamin D3 (5 mg/kg) administered via gavage for 4 consecutive days, followed by intraperitoneal injection of CCl_4 (2 g/kg) on Day 0. A separate group received a direct injection of $CaCl_2$ (150 mg/kg) to validate the role of calcium. **Results**: Vitamin D3 alone significantly increased serum calcium levels to 13.0 mg/dL (normal: 7.77 mg/dL), with no evidence of liver or kidney damage or oxidative stress.[2]

Solubility Information

Solubility	DMSO: 252.5 mg/mL (656.46 mM),Sonication is recommended. (The compound is unstable in solution, please use soon.) (< 1 mg/ml refers to the product slightly soluble or insoluble)
In vivo Formulation	10% DMSO+40% PEG300+5% Tween 80+45% Saline: 1 mg/mL (2.6 mM),Sonication is recommended.

In vivo Formulation	*Please add the solvents sequentially, clarifying the solution as much as possible before adding the next one. Dissolve by heating and/or sonication if necessary. Working solution is recommended to be prepared and used immediately. The formulation provided above is for reference purposes only. In vivo formulations may vary and should be modified based on specific experimental conditions.*

Preparing Stock Solutions

	1mg	5mg	10mg
1 mM	2.5998 mL	12.9992 mL	25.9983 mL
5 mM	0.520 mL	2.5998 mL	5.1997 mL
10 mM	0.260 mL	1.2999 mL	2.5998 mL
50 mM	0.052 mL	0.260 mL	0.520 mL

Please select the appropriate solvent to prepare the stock solution, according to the solubility of the product in different solvents. Please use it as soon as possible.

Note: The dilution table applies only to solid products. For liquid products, please calculate the stock solution based on the stated concentration and/or density.

Reference

Laura Bergadà, et al. Role of local bioactivation of vitamin D by CYP27A1 and CYP2R1 in the control of cell growth in normal endometrium and endometrial carcinoma. Lab Invest. 2014 Jun;94(6):608-22

Yoshioka H, et al. Vitamin D3-induced hypercalcemia increases carbon tetrachloride-induced hepatotoxicity through elevated oxidative stress in mice. PLoS One. 2017;12(4):e0176524. Published 2017 Apr 27.

Haussler MR, et al. Vitamin D receptor (VDR)-mediated actions of 1α,25(OH)$_2$vitamin D$_3$: genomic and non-genomic mechanisms. Best Pract Res Clin Endocrinol Metab. 2011;25(4):543-559.

Rochel N. Vitamin D and Its Receptor from a Structural Perspective. Nutrients. 2022;14(14):2847. Published 2022 Jul 12.