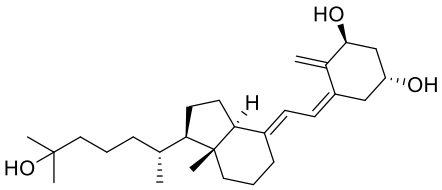
Product data sheet

MedKoo Cat#: 527861 Name: Calcitriol CAS#: 32222-06-3 Chemical Formula: $C_{27}H_{44}O_3$ Exact Mass: 416.329 Molecular Weight: 416.646	
Product supplied as:	Powder
Purity (by HPLC):	≥ 98%
Shipping conditions	Ambient temperature
Storage conditions:	Powder: -20°C 3 years; 4°C 2 years.
	In solvent: -80°C 3 months; -20°C 2 weeks.

1. Product description:
Calcitriol is the active form of vitamin D, normally made in the kidney. A manufactured form is used to treat kidney disease with low blood calcium, hyperparathyroidism due to kidney disease, low blood calcium due to hypoparathyroidism, osteoporosis, osteomalacia, and familial hypophosphatemia.

2. CoA, QC data, SDS, and handling instruction
SDS and handling instruction, CoA with copies of QC data (NMR, HPLC and MS analytical spectra) can be downloaded from the product web page under "QC And Documents" section. Note: copies of analytical spectra may not be available if the product is being supplied by MedKoo partners. Whether the product was made by MedKoo or provided by its partners, the quality is 100% guaranteed.

3. Solubility data

Solvent	Max Conc. mg/mL	Max Conc. mM
DMSO	81.0	194.41
Ethanol	61.33	147.20
Methanol	50.0	120.01

4. Stock solution preparation table:

Concentration / Solvent Volume / Mass	1 mg	5 mg	10 mg
1 mM	2.40 mL	12.00 mL	24.00 mL
5 mM	0.48 mL	2.40 mL	4.80 mL
10 mM	0.24 mL	1.20 mL	2.40 mL
50 mM	0.05 mL	0.24 mL	0.48 mL

5. Molarity Calculator, Reconstitution Calculator, Dilution Calculator
Please refer the product web page under section of "Calculator"

6. Recommended literature which reported protocols for in vitro and in vivo study
In vitro study

1. Annamalai C, Seth R, Viswanathan P. Ferrotoxicity and Its Amelioration by Calcitriol in Cultured Renal Cells. Anal Cell Pathol (Amst). 2021 Feb 22;2021:6634429. doi: 10.1155/2021/6634429. PMID: 33680716; PMCID: PMC7925041.
2. Gerousi M, Psomopoulos F, Kotta K, Tsagiopoulou M, Stavroyianni N, Anagnostopoulos A, Anastasiadis A, Gkanidou M, Kotsianidis I, Ntoufa S, Stamatopoulos K. The Calcitriol/Vitamin D Receptor System Regulates Key Immune Signaling Pathways in Chronic Lymphocytic Leukemia. Cancers (Basel). 2021 Jan 14;13(2):285. doi: 10.3390/cancers13020285. PMID: 33466695; PMCID: PMC7828837.

In vivo study

1. Su YB, Li TH, Huang CC, Tsai HC, Huang SF, Hsieh YC, Yang YY, Huang YH, Hou MC, Lin HC. Chronic calcitriol supplementation improves the inflammatory profiles of circulating monocytes and the associated intestinal/adipose tissue alteration in a diet-induced steatohepatitis rat model. PLoS One. 2018 Apr 23;13(4):e0194867. doi: 10.1371/journal.pone.0194867. PMID: 29684027; PMCID: PMC5912737.

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2. Srivastava AK, Rizvi A, Cui T, Han C, Banerjee A, Naseem I, Zheng Y, Wani AA, Wang QE. Depleting ovarian cancer stem cells with calcitriol. Oncotarget. 2018 Feb 16;9(18):14481-14491. doi: 10.18632/oncotarget.24520. PMID: 29581858; PMCID: PMC5865684.

7. Bioactivity

Biological target:

Calcitriol is the most active metabolite of vitamin D and also a vitamin D receptor (VDR) agonist.

In vitro activity

This study further investigated the impact of calcitriol on signaling pathways known to regulate CLL (chronic lymphocytic leukemia) cell proliferation and survival. Considering that calcitriol regulates the TLR and PI3K/AKT signaling pathways, this study sought to investigate the activation status of extracellular signal-regulated kinase 1/2 (ERK1/2) and NF-κB p65, both implicated in these pathways. To this end, using intracellular phospho-flow cytometry, this study analyzed pERK1/2 and pNF-κB p65 levels in CLL cells supplemented with calcitriol for 24 h and observed a significant increase in pERK ($n = 8$, FD: 1.6, $p < 0.01$) (Figure 3A,B), hence contrasting the phosphorylation of NF-κB that was significantly decreased ($n = 6$, FD: 3.4, $p < 0.05$) (Figure 3C,D).

Reference: Cancers (Basel). 2021 Jan; 13(2): 285. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7828837/

In vivo activity

Compared to lean-V (vehicle) rats, NASH (nonalcoholic steatohepatitis)-V rats were found to have higher levels of plasma TNFα, LBP, and plasma/portal endotoxin, as well as lower levels of plasma/intestinal calcitriol (Table 2). Compared to the NASH-V group, restoration of plasma calcitriol levels in NASH-vit.D rats by 10 weeks of calcitriol treatment was accompanied by the suppression of plasma and portal endotoxin levels as well as the reduction of LBP and TNFα levels (Table 2). Higher TNFα, TNFRI, NFκB, and TLR4 expression in NASH-V rat monocytes than in the lean-V group was observed and this was accompanied by lower vitamin D receptor (VDR) expression (Fig 1D–1F). Significantly, 10 weeks of calcitriol treatment suppressed the TNFα, TNFRI, NFκB and TLR4 expression and normalized VDR expression in the NASH rat monocytes (Fig 1D–1F). Nonetheless, no significant difference in the aforementioned markers was found when lean-V and lean-vit.D groups were compared.

Reference: PLoS One. 2018; 13(4): e0194867. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5912737/

Note: The information listed here was extracted from literature. MedKoo has not independently retested and confirmed the accuracy of these methods. Customer should use it just for a reference only.