Alfacalcidol

Cat. No.: HY-10003

CAS No.: 41294-56-8

Molecular Formula: $C_{27}H_{44}O_2$

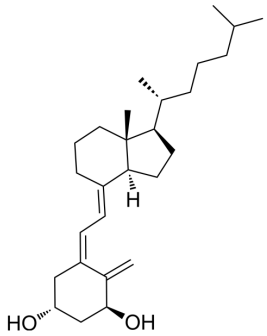
Molecular Weight: 400.64

Target: VD/VDR

Pathway: Vitamin D Related/Nuclear Receptor

Storage: -20°C, protect from light, stored under nitrogen

* The compound is unstable in solutions, freshly prepared is recommended.



SOLVENT & SOLUBILITY

In Vitro

DMSO : ≥ 50 mg/mL (124.80 mM)

* "≥" means soluble, but saturation unknown.

Preparing Stock Solutions

Solvent / Mass / Concentration	1 mg	5 mg	10 mg
1 mM	2.4960 mL	12.4800 mL	24.9601 mL
5 mM	0.4992 mL	2.4960 mL	4.9920 mL
10 mM	0.2496 mL	1.2480 mL	2.4960 mL

Please refer to the solubility information to select the appropriate solvent.

In Vivo

1. Add each solvent one by one: 10% DMSO >> 40% PEG300 >> 5% Tween-80 >> 45% saline
   Solubility: ≥ 2.5 mg/mL (6.24 mM); Clear solution
2. Add each solvent one by one: 10% DMSO >> 90% (20% SBE-β-CD in saline)
   Solubility: 2.5 mg/mL (6.24 mM); Suspended solution; Need ultrasonic
3. Add each solvent one by one: 10% DMSO >> 90% corn oil
   Solubility: ≥ 2.5 mg/mL (6.24 mM); Clear solution

BIOLOGICAL ACTIVITY

Description

Alfacalcidol (1-hydroxycholecalciferol) is a vitamin D active metabolites, acts as a non-selective VDR activator medication, and widely be used in the management of osteoporosis[1][2][3][4].

IC_{50} & Target

VDR[2]

In Vivo

Alfacalcidol (0.025-0.1 mg/kg; p.o.; five times a week; for 3 months) exerts bone-protective effects independently of its Ca-related effects, and is in this respect superior to vitamin D(3), and that the skeletal actions of alfacalcidol take place, at least in part, independently of suppression of PTH[3].

MCE has not independently confirmed the accuracy of these methods. They are for reference only.

Animal Model:	Female Wistar-Imamichi rats (8 months old), ovariectomized[3]
Dosage:	0.025 mg/kg, 0.05 mg/kg, 0.1 mg/kg
Administration:	Oral administration; five times a week; for 3 months
Result:	Exerted bone-protective effects independently of its Ca-related effects

CUSTOMER VALIDATION

- Int J Mol Sci. 2017 Dec 19;18(12). pii: E2764.
- Chinese Journal of Animal Nutrition. 2013, 25(8): 1752-1761.

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REFERENCES

[1]. Galeşanu C, et al. [Postmenopausal osteoporosis. Digital Rx radiogrammetry in the diagnosis and follow-up of treatment with alfacalcidol]. Rev Med Chir Soc Med Nat Iasi. 2006 Oct-Dec;110(4):833-41.

[2]. Nuijten M, et al. Cost Effectiveness of Paricalcitol versus a Non-Selective Vitamin D Receptor Activator for Secondary Hyperparathyroidism in the UK. Clin Drug Investig. 2010;30(8):545-57.

[3]. Shiraishi A, et al. The advantage of alfacalcidol over vitamin D in the treatment of osteoporosis. Calcif Tissue Int. 1999 Oct;65(4):311-6.

[4]. Nagaoka H, et al. Alfacalcidol enhances collagen quality in ovariectomized rat bones. J Orthop Res. 2014 Aug;32(8):1030-6.

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