

## Product Information

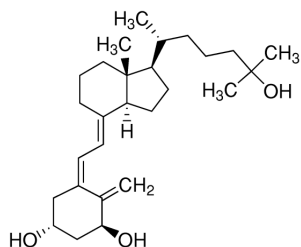
### 1 $\alpha$ ,25-Dihydroxyvitamin D<sub>3</sub>

Catalog Number **D1530**

Storage Temperature  $-20\text{ }^{\circ}\text{C}$

CAS RN 32222-06-3

Synonyms: 1 $\alpha$ ,25-Dihydroxycholecalciferol, Calcitriol



#### Product Description

Molecular Formula: C<sub>27</sub>H<sub>44</sub>O<sub>3</sub>

Formula Weight: 416.64

$\lambda_{\text{max}}$ :<sup>1</sup> 264 nm

Extinction Coefficient:<sup>1</sup> E<sup>mM</sup> = 19.0

1 $\alpha$ ,25-Dihydroxyvitamin D<sub>3</sub> is the biologically active form of vitamin D<sub>3</sub> in calcium absorption and deposition. It has widespread effects on cellular differentiation and proliferation, and can modulate immune responsiveness, and central nervous system function. Studies suggest 1 $\alpha$ ,25-dihydroxyvitamin D<sub>3</sub> acts as a chemopreventive agent against several malignancies including cancers of the prostate and colon and shows synergy with other anticancer compounds.

This product is routinely used at 10<sup>-6</sup>–10<sup>-12</sup> M in cell culture for inhibition studies on keratinocytes.<sup>3</sup> This product has been shown to inhibit normal human keratinocyte cell growth by a mechanism that partly involves an increase in the release of transforming growth factor  $\beta$  (TGF- $\beta$ ).<sup>4</sup> In addition, treatment of the human keratinocyte cell line HaCaT with this product resulted in the hydrolysis of sphingomyelin via Tumor Necrosis Factor  $\alpha$  (TNF- $\alpha$ ) with peak elevations of ceramide levels.<sup>5</sup>

Metabolism of this product can be studied using either pig kidney cells or rat intestinal cells. All known metabolites of this product can be analyzed using two consecutive normal-phase HPLC systems.<sup>3</sup>

#### Precautions and Disclaimer

This product is for R&D use only, not for drug, household, or other uses. Please consult the Material Safety Data Sheet for information regarding hazards and safe handling practices.

#### Preparation Instructions

This product is slightly soluble in methanol, ethanol, ethyl acetate, and tetrahydrofuran.<sup>1</sup> It is air and light sensitive.<sup>2</sup> For use in cell culture, this product was diluted into medium from 10  $\mu\text{M}$  stock solutions prepared in ethanol.<sup>5</sup> For chromatographic analysis, this product can be dissolved in a mixture of hexane:isopropanol:acetic acid (v:v:v, 87.4:12.3:0.3) at 0.25 mg/ml.

#### Storage/Stability

Store the product at  $-20\text{ }^{\circ}\text{C}$ . This product is reported to be air and light sensitive. Therefore, solutions should be stored under an inert gas at  $-20\text{ }^{\circ}\text{C}$  in the dark. Stock solutions of 1 mM in 95% ethanol are reported to remain active at  $-20\text{ }^{\circ}\text{C}$  until needed for use.<sup>6</sup>

#### References

1. Merck Index, 11th ed. Entry# 1641.
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3. Napoli, J.L., et al., Induction, Inhibition, and Analysis of Vitamin D Metabolism in Cultured Cells. Methods in Enzymology, **206**, 491-501 (1991).
4. Haugen, J.D., et al., 1 $\alpha$ ,25-dihydroxyvitamin D<sub>3</sub> inhibits normal human keratinocyte growth by increasing transforming growth factor- $\beta$ 2 release. Biochem. Biophys. Res. Commun., **229**, 618-623 (1996).

5. Geilen, C.C., et al.,  $1\alpha,25$ -dihydroxyvitamin D<sub>3</sub> induces sphingomyelin hydrolysis in HaCaT cells via tumor necrosis factor- $\alpha$ . J. Biol. Chem., **272**, 8997-9001 (1997).
6. Daynes, R.A., et al., Induction of common mucosal immunity by hormonally immunomodulated peripheral immunization. Infect. Immun., **64**, 1100-1109 (1996).

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