SignalSilence® Vitamin D3 Receptor siRNA I

#12719 Store at -20°C

☑ 10 µM in 300 µl (3 nmol)

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For Research Use Only. Not For Use In Diagnostic Procedures.

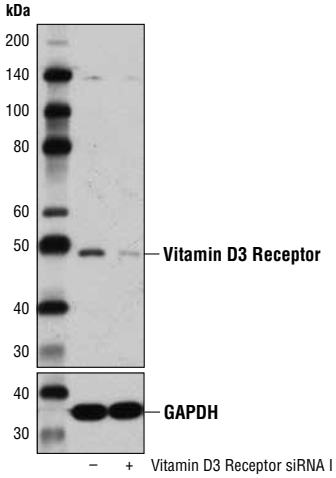
Entrez-Gene ID #7421
Swiss-Prot Acc. #P11473

Species Cross-Reactivity: H

Description: SignalSilence® Vitamin D3 Receptor siRNA I from Cell Signaling Technology (CST) allows the researcher to specifically inhibit vitamin D3 receptor expression using RNA interference, a method whereby gene expression can be selectively silenced through the delivery of double stranded RNA molecules into the cell. All SignalSilence® siRNA products from CST are rigorously tested in-house and have been shown to reduce target protein expression by western analysis.

Background: Although originally identified based on their roles in calcium and bone homeostasis, the vitamin D3 receptor (VDR/NR1I1) and its ligand 1-α, 25-dihydroxy-cholecalciferol [1α, 25$(OH)_2D_3$] are now recognized to exert biological effects in almost every tissue of the human body. Targets for vitamin D signaling include the central nervous system, skin, immune system, endocrine glands, kidney, and colon. At the cellular level, vitamin D signaling affects proliferation, differentiation, and apoptosis of both normal and transformed cells. Within the steroid receptor gene family, VDR belongs to the NR1I subfamily that also includes NR1I2/PXR and NR1I3/CAR. The human *VDR* gene is composed of 11 exons that encode six domains (A-F) of the full length VDR protein, which includes an N-terminal dual zinc finger DNA binding domain, a C-terminal ligand-binding activity domain, and an extensive unstructured region that links the two functional domains together (1). Upon 1α, 25$(OH)_2D_3$ binding to the hormone ligand-binding domain, VDR is stabilized by the phosphorylation of Ser51 in the DNA-binding domain by PKC (2), and Ser208 in the hinge region by casein kinase II (3). VDR associates with the retinoic acid receptor (RXR) through dimerization domains. The 1α, 25$(OH)_2D_3$-VDR-RXR complex binds to the vitamin D response elements (VDREs) in the promoters of target genes through the DNA-binding domain. Ligand-induced conformation changes in VDR results in the dissociation of the co-repressor, silencing-mediator for retinoid and thyroid hormone receptors (SMRT), and allows interaction of the VDR activation function (AF2) transactivation domain with transcriptional coactivators (1).

Studies have shown that variable VDR expression is associated with different forms or stages of cancer and likely results from tissue-type variation in 1α, 25$(OH)_2D_3$ signaling. In the case of colon cancer, research indicates that VDR expression is relatively higher in hyperplastic colon polyps and during early tumorigenesis but diminishes in later stage, poorly differentiated tumors. Multiple studies suggest that 1α, 25$(OH)_2D_3$ may be an attractive target for development as a therapeutic anticancer agent (4,5) .



Western blot analysis of extracts from 293T cells, transfected with 100 nM SignalSilence® Control siRNA (Unconjugated) #6568 (-) or SignalSilence® Vitamin D3 Receptor siRNA I (+), using Vitamin D3 Receptor (D2K6W) Rabbit mAb #12550 (upper) or GAPDH (D16H11) XP® Rabbit mAb #5174 (lower). The Vitamin D3 Receptor (D2K6W) Rabbit mAb confirms silencing of vitamin D3 receptor expression, while the GAPDH (D16H11) XP® Rabbit mAb is used as a loading control.

Directions for Use: CST recommends transfection with 100 nM SignalSilence® Vitamin D3 Receptor siRNA I 48 to 72 hours prior to cell lysis. For transfection procedure, follow protocol provided by the transfection reagent manufacturer. Please feel free to contact CST with any questions on use.

Each vial contains the equivalent of 100 transfections, which corresponds to a final siRNA concentration of 100 nM per transfection in a 24-well plate with a total volume of 300 µl per well.

Quality Control: Oligonucleotide synthesis is monitored base by base through trityl analysis to ensure appropriate coupling efficiency. The oligo is subsequently purified by affinity-solid phase extraction. The annealed RNA duplex is further analyzed by mass spectrometry to verify the exact composition of the duplex. Each lot is compared to the previous lot by mass spectrometry to ensure maximum lot-to-lot consistency.

Storage: Vitamin D3 Receptor siRNA I is supplied in RNAse-free water. *Aliquot and store at -20°C.*

Please visit www.cellsignal.com for a complete listing of recommended companion products.

Background References:

(1) Haussler, M.R. et al. (1998) *J Bone Miner Res* 13, 325-49.

(2) Hsieh, J.C. et al. (1991) *Proc Natl Acad Sci U S A* 88, 9315-9.

(3) Jurutka, P.W. et al. (1993) *J Biol Chem* 268, 6791-9.

(4) Shabahang, M. et al. (1993) *Cancer Res* 53, 3712-8.

(5) Matusiak, D. et al. (2005) *Cancer Epidemiol Biomarkers Prev* 14, 2370-6.

Applications Key: **W**—Western **IP**—Immunoprecipitation **IHC**—Immunohistochemistry **ChIP**—Chromatin Immunoprecipitation **IF**—Immunofluorescence **F**—Flow cytometry **E-P**—ELISA-Peptide

Species Cross-Reactivity Key: **H**—human **M**—mouse **R**—rat **Hm**—hamster **Mk**—monkey **Mi**—mink **C**—chicken **Dm**—D. melanogaster **X**—Xenopus **Z**—zebrafish **B**—bovine **Dg**—dog **Pg**—pig **Sc**—S. cerevisiae **Ce**—C. elegans **Hr**—Horse **All**—all species expected Species enclosed in parentheses are predicted to react based on 100% homology.