SANTA CRUZ BIOTECHNOLOGY, INC.

VDR siRNA (m): sc-36811

BACKGROUND

The active metabolite of vitamin D modulates the expression of a wide variety of genes in a developmentally specific manner. This secosteroid hormone can up- or downregulate the expression of genes involved in a diverse array of responses such as proliferation, differentiation and calcium homeostasis. 1,25-$(OH)_2$-vitamin D_3 exerts its effects through interaction with the vitamin D receptor (VDR), a member of the superfamily of hormone-activated nuclear receptors. In its ligand-bound state, the VDR forms heterodimers with the 9-*cis* retinoic acid receptor, RXR, and affects gene expression by binding specific DNA sequences known as hormone response elements, or HREs. In addition to regulating the above-mentioned cellular responses, 1,25-$(OH)_2$-vitamin D_3 exhibits antiproliferative properties in osteosarcoma, melanoma, colon carcinoma and breast carcinoma cells.

CHROMOSOMAL LOCATION

Genetic locus: Vdr (mouse) mapping to 15 F1.

PRODUCT

VDR siRNA (m) is a pool of 3 target-specific 19-25 nt siRNAs designed to knock down gene expression. Each vial contains 3.3 nmol of lyophilized siRNA, sufficient for a 10 µM solution once resuspended using protocol below. Suitable for 50-100 transfections. Also see VDR shRNA Plasmid (m): sc-36811-SH and VDR shRNA (m) Lentiviral Particles: sc-36811-V as alternate gene silencing products.

For independent verification of VDR (m) gene silencing results, we also provide the individual siRNA duplex components. Each is available as 3.3 nmol of lyophilized siRNA. These include: sc-36811A, sc-36811B and sc-36811C.

STORAGE AND RESUSPENSION

Store lyophilized siRNA duplex at -20° C with desiccant. Stable for at least one year from the date of shipment. Once resuspended, store at -20° C, avoid contact with RNAses and repeated freeze thaw cycles.

Resuspend lyophilized siRNA duplex in 330 µl of the RNAse-free water provided. Resuspension of the siRNA duplex in 330 µl of RNAse-free water makes a 10 µM solution in a 10 µM Tris-HCl, pH 8.0, 20 mM NaCl, 1 mM EDTA buffered solution.

APPLICATIONS

VDR siRNA (m) is recommended for the inhibition of VDR expression in mouse cells.

SUPPORT REAGENTS

For optimal siRNA transfection efficiency, Santa Cruz Biotechnology's siRNA Transfection Reagent: sc-29528 (0.3 ml), siRNA Transfection Medium: sc-36868 (20 ml) and siRNA Dilution Buffer: sc-29527 (1.5 ml) are recommended. Control siRNAs or Fluorescein Conjugated Control siRNAs are available as 10 µM in 66 µl. Each contain a scrambled sequence that will not lead to the specific degradation of any known cellular mRNA. Fluorescein Conjugated Control siRNAs include: sc-36869, sc-44239, sc-44240 and sc-44241. Control siRNAs include: sc-37007, sc-44230, sc-44231, sc-44232, sc-44233, sc-44234, sc-44235, sc-44236, sc-44237 and sc-44238.

GENE EXPRESSION MONITORING

VDR (D-6): sc-13133 is recommended as a control antibody for monitoring of VDR gene expression knockdown by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000) or immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500).

RT-PCR REAGENTS

Semi-quantitative RT-PCR may be performed to monitor VDR gene expression knockdown using RT-PCR Primer: VDR (m)-PR: sc-36811-PR (20 µl, 526 bp). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

SELECT PRODUCT CITATIONS

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3. Hur, J., et al. 2014. Regulatory effect of 25-hydroxyvitamin D_3 on nitric oxide production in activated microglia. Korean J. Physiol. Pharmacol. 18: 397-402.
4. Manna, P., et al. 2017. Vitamin D supplementation inhibits oxidative stress and upregulate SIRT1/AMPK/GLUT4 cascade in high glucose-treated 3T3L1 adipocytes and in adipose tissue of high fat diet-fed diabetic mice. Arch. Biochem. Biophys. 615: 22-34.
5. Jain, S.K., et al. 2018. Glutathione stimulates vitamin D regulatory and glucose-metabolism genes, lowers oxidative stress and inflammation, and increases 25-hydroxy-vitamin D levels in blood: a novel approach to treat 25-hydroxyvitamin D deficiency. Antioxid. Redox Signal. 29: 1792-1807.
6. Tsoumpra, M.K., et al. 2020. Dystrobrevin α gene is a direct target of the vitamin D receptor in muscle. J. Mol. Endocrinol. 64: 195-208.
7. Tanaka, K.I., et al. 2020. Modulators of Fam210a and roles of Fam210a in the function of myoblasts. Calcif. Tissue Int. 106: 533-540.
8. Shang, S., et al. 2020. Artesunate interacts with the vitamin D receptor to reverse sepsis-induced immunosuppression in a mouse model via enhancing autophagy. Br. J. Pharmacol. 177: 4147-4165.
9. Hobub, L., et al. 2020. Pleiotropic cardiac functions controlled by ischemia-induced lncRNA H19. J. Mol. Cell. Cardiol. 146: 43-59.
10. Hiraike, Y., et al. 2022. NFIA determines the cis-effect of genetic variation on Ucp1 expression in murinethermogenic adipocytes. iScience 25: 104729.

RESEARCH USE

For research use only, not for use in diagnostic procedures.

PROTOCOLS

See our web site at www.scbt.com for detailed protocols and support products.