SANTA CRUZ BIOTECHNOLOGY, INC.

Dkk-1 siRNA (h): sc-37082

SANTA CRUZ BIOTECHNOLOGY

The Power to Question

BACKGROUND

The Wnt genes are a group of well conserved, cysteine-rich secreted glycoproteins that are required for numerous developmental processes including embryogenesis, asymmetric cell division and central nervous system (CNS) patterning. Wnt association with the seven membrane spanning receptor frizzled activates dishevelled, which downregulates glycogen synthase kinase (GSK) through serine phosphorylation, causing the accumulation of β-catenin and subsequent regulation of developmentally significant Wnt target genes. The Dickkopf family of secreted inhibitors of Wnt signaling ensures proper morphological development by antagonizing different stages of the Wnt cascade. Dkk-1 (Dickkopf-1) acts upstream of β-catenin and dishevelled to inhibit Wnt signaling. Dkk-1 is a 266 amino acid (human), secreted protein that contains a 31-residue N-terminal signal peptide, two cysteine rich domains and a putative carboxy-terminal N-glycosylation site. Human Dkk-1 transcripts are abundantly present in fetal kidney, adult placenta and adult prostate. Putative *cis* regulatory elements upstream of the Dkk-1 start site include p53, Sp1, MyoD, STAT, Oct-1/2, C/EBP α, C/EBP β, GATA-1, GATA-2 and GATA-3.

CHROMOSOMAL LOCATION

Genetic locus: DKK1 (human) mapping to 10q21.1.

PRODUCT

Dkk-1 siRNA (h) 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 Dkk-1 shRNA Plasmid (h): sc-37082-SH and Dkk-1 shRNA (h) Lentiviral Particles: sc-37082-V as alternate gene silencing products.

For independent verification of Dkk-1 (h) gene silencing results, we also provide the individual siRNA duplex components. Each is available as 3.3 nmol of lyophilized siRNA. These include: sc-37082A, sc-37082B and sc-37082C.

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

Dkk-1 siRNA (h) is recommended for the inhibition of Dkk-1 expression in human cells.

PROTOCOLS

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

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

Dkk-1 (B-7): sc-374574 is recommended as a control antibody for monitoring of Dkk-1 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 Dkk-1 gene expression knockdown using RT-PCR Primer: Dkk-1 (h)-PR: sc-37082-PR (20 µl, 433 bp). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

SELECT PRODUCT CITATIONS

1. Esposito, G., et al. 2008. S100B induces τ protein hyperphosphorylation via Dickopff-1 up-regulation and disrupts the Wnt pathway in human neural stem cells. J. Cell. Mol. Med. 12: 914-927.
2. Smadja, D.M., et al. 2010. The Wnt antagonist Dickkopf-1 increases endothelial progenitor cell angiogenic potential. Arterioscler. Thromb. Vasc. Biol. 30: 2544-2552.
3. Hartman, M.L., et al. 2014. Gene expression profiling identifies microphthalmia-associated transcription factor (MITF) and Dickkopf-1 (Dkk-1) as regulators of microenvironment-driven alterations in melanoma phenotype. PLoS ONE 9: e95157.
4. Cao, J., et al. 2015. Agonists of epoxyeicosatrienoic acids reduce infarct size and ameliorate cardiac dysfunction via activation of HO-1 and Wnt1 canonical pathway. Prostaglandins Other Lipid Mediat. 116-117: 76-86.
5. Lin, S.C., et al. 2020. Activation of the miR-371/372/373 miRNA cluster enhances oncogenicity and drug resistance in oral carcinoma cells. Int. J. Mol. Sci. 21: 9442.
6. Claveria-Cabello, A., et al. 2020. Dual pharmacological targeting of HDACs and PDE5 inhibits liver disease progression in a mouse model of biliary inflammation and fibrosis. Cancers 12: 3748.
7. Zeng, P., et al. 2021. ERK1/2 inhibition reduces vascular calcification by activating miR-126-3p-Dkk-1/LRP6 pathway. Theranostics 11: 1129-1146.

RESEARCH USE

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