SANTA CRUZ BIOTECHNOLOGY, INC.

GDF-15 siRNA (h): sc-39798

BACKGROUND

Growth differentiation factor 15 (GDF-15), also known as PDF, MIC-1, PLAB, NAG-1 or PTGF-β, is a member of the transforming growth factor β (TGF-β) superfamily. Synthesized intracellularly, the protein is secreted as a dimer linked by disulfide bonds. Epithelial cells and macrophages are the sites of strongest GDF-15 expression, although it is widely expressed in adult tissue. In the brain, GDF-15 expression occurs in the choroid plexus, from which the protein is secreted into the cerebrospinal fluid. The gene for GDF-15 is responsive to p53 tumor suppressor protein, and in cultured cerebellar granule neurons GDF-15 can prevent cell death by the activation of Akt and inhibition of ERK. GDF-15 acts as a trophic factor for certain classes of neurons, promoting cell survival and differentiation. Overexpression of GDF-15 occurs in prostate cancer, and may be a means of diagnosis. In the uterus, GDF-15 may work to suppress maternally derived proinflammatory cytokines, thereby promoting fetal survival.

CHROMOSOMAL LOCATION

Genetic locus: GDF15 (human) mapping to 19p13.11.

PRODUCT

GDF-15 siRNA (h) is a target-specific 19-25 nt siRNA 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 GDF-15 shRNA Plasmid (h): sc-39798-SH and GDF-15 shRNA (h) Lentiviral Particles: sc-39798-V as alternate gene silencing products.

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

GDF-15 siRNA (h) is recommended for the inhibition of GDF-15 expression in human 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

GDF-15 (G-5): sc-377195 is recommended as a control antibody for monitoring of GDF-15 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 GDF-15 gene expression knockdown using RT-PCR Primer: GDF-15 (h)-PR: sc-39798-PR (20 µl, 362 bp). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

SELECT PRODUCT CITATIONS

1. Lincová, E., et al. 2009. Multiple defects in negative regulation of the PKB/Akt pathway sensitise human cancer cells to the antiproliferative effect of non-steroidal anti-inflammatory drugs. Biochem. Pharmacol. 78: 561-572.
2. Tsui, K.H., et al. 2012. Growth differentiation factor-15 upregulates interleukin-6 to promote tumorigenesis of prostate carcinoma PC-3 cells. J. Mol. Endocrinol. 49: 153-163.
3. Li, J., et al. 2013. Adaptive induction of growth differentiation factor 15 attenuates endothelial cell apoptosis in response to high glucose stimulus. PLoS ONE 8: e65549.
4. Varadarajan, S., et al. 2015. The transrepression arm of glucocorticoid receptor signaling is protective in mutant huntingtin-mediated neurodegeneration. Cell Death Differ. 22: 1388-1396.
5. Peake, B.F., et al. 2017. Growth differentiation factor 15 mediates epithelial mesenchymal transition and invasion of breast cancers through IGF-1R-FoxM1 signaling. Oncotarget 8: 94393-94406.
6. Louca, M., et al. 2019. Coordinated expression of Ras suppressor 1 (RSU-1) and growth differentiation factor 15 (GDF-15) affects glioma cell invasion. Cancers 11: 1159.
7. Stemmler, A., et al. 2021. GDF15 supports the inflammatory response of PdL fibroblasts stimulated by *P. gingivalis* LPS and concurrent compression. Int. J. Mol. Sci. 22: 13608.
7. Kim, I., et al. 2023. Tolfenamic acid negatively regulates YAP and TAZ expression in human cancer cells. Biochim. Biophys. Acta Mol. Cell Res. 1870: 119556.
9. Nitzsche, A., et al. 2024. GDF-15 modulates the zoledronic-acid-induced hyperinflammatory mechanoresponse of periodontal ligament fibroblasts. Cells 13: 147.

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.