SANTA CRUZ BIOTECHNOLOGY, INC.

GDF-15 siRNA (m): sc-39799

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.

REFERENCES

1. Fairlie, W.D., et al. 1999. MIC-1 is a novel TGF-β superfamily cytokine associated with macrophage activation. J. Leukoc. Biol. 65: 2-5.
2. Bottner, M., et al. 1999. Expression of a novel member of the TGF-β superfamily, growth/differentiation factor-15/macrophage-inhibiting cytokine-1 (GDF-15/MIC-1) in adult rat tissues. Cell Tissue Res. 297: 103-110.
3. Strelau, J., et al. 2000. GDF-15/MIC-1 a novel member of the TGF-β superfamily. J. Neural Transm. Suppl. 60: 273-276.
4. Moore, A.G., et al. 2000. The transforming growth factor-β superfamily cytokine macrophage inhibitory cytokine-1 is present in high concentrations in the serum of pregnant women. J. Clin. Endocrinol. Metab. 85: 4781-4788.

CHROMOSOMAL LOCATION

Genetic locus: Gdf15 (mouse) mapping to 8 B3.3.

PRODUCT

GDF-15 siRNA (m) is a pool of 2 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 GDF-15 shRNA Plasmid (m): sc-39799-SH and GDF-15 shRNA (m) Lentiviral Particles: sc-39799-V as alternate gene silencing products.

For independent verification of GDF-15 (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-39799A and sc-39799B.

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 (m) is recommended for the inhibition of GDF-15 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

GDF-15 (H-2): sc-515675 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).

To ensure optimal results, the following support reagents are recommended: 1) Western Blotting: use m-IgGκ BP-HRP: sc-516102 or m-IgGκ BP-HRP (Cruz Marker): sc-516102-CM (dilution range: 1:1000-1:10000), Cruz Marker™ Molecular Weight Standards: sc-2035, UltraCruz® Blocking Reagent: sc-516214 and Western Blotting Luminol Reagent: sc-2048. 2) Immunofluorescence: use m-IgGκ BP-FITC: sc-516140 or m-IgGκ BP-PE: sc-516141 (dilution range: 1:50-1:200) with UltraCruz® Mounting Medium: sc-24941 or UltraCruz® Hard-set Mounting Medium: sc-359850.

RT-PCR REAGENTS

Semi-quantitative RT-PCR may be performed to monitor GDF-15 gene expression knockdown using RT-PCR Primer: GDF-15 (m)-PR: sc-39799-PR (20 µl). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

SELECT PRODUCT CITATIONS

1. Tang, H., et al. 2019. mTORC1 underlies age-related muscle fiber damage and loss by inducing oxidative stress and catabolism. Aging Cell 18: e12943.
2. Aguilar-Recarte, D., et al. 2021. GDF15 mediates the metabolic effects of PPARβ/δ by activating AMPK. Cell Rep. 36: 109501.
3. Aguilar-Recarte, D., et al. 2023. A positive feedback loop between AMPK and GDF15 promotes metformin antidiabetic effects. Pharmacol. Res. 187: 106578.

RESEARCH USE

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