SANTA CRUZ BIOTECHNOLOGY, INC.

DDT siRNA (m): sc-142919

BACKGROUND

Macrophage migration inhibitory factor, known as MIF or glycosylation-inhibiting factor, is a secreted, homotrimeric, pro-inflammatory cytokine that modulates macrophage and T cell function and is an important regulator of host response to infection. MIF is expressed at sites of inflammation, which suggests that it plays a role in regulating macrophage function in host defense. The only known family member of MIF is D-dopachrome tautomerase (DDT), a protein that is thought to similarly play a role in the inflammation process. DDT is highly expressed in liver with lower levels in other organs, including heart, lung and pancreas. It resides in the cytoplasm as a homotrimer and converts 2-carboxy-2,3-dihyroindole-5, 6-quinone (D-dopachrome) into 5,6-dihydroxyindole. DDT requires the presence of an N-terminal proline residue for catalytic activity and is involved in the biosynthesis of melanin, an antioxidant. In response to liver damage, DDT has been shown to increase protein levels in order to accelerate melanin biosynthesis and protect the liver from oxidative stress.

REFERENCES

1. Weiser, W.Y., et al. 1989. Molecular cloning of a cDNA encoding a human macro-phage migration inhibitory factor. Proc. Natl. Acad. Sci. USA 86: 7522-7526.
2. Paralkar, V., et al. 1994. Cloning the human gene for macrophage migration inhibitory factor (MIF). Genomics 19: 48-51.
3. Bernhagen, J., et al. 1994. Purification, bioactivity, and secondary structure analysis of mouse and human macrophage migration inhibitory factor (MIF). Biochemistry 33: 14144-14155.
4. Yoshida, H., et al. 1997. NMR characterization of physicochemical properties of rat D-dopachrome tautomerase. Biochem. Mol. Biol. Int. 42: 891-899.
5. Nishihira, J., et al. 1998. Molecular cloning of human D-dopachrome tautomerase cDNA: N-terminal proline is essential for enzyme activation. Biochem. Biophys. Res. Commun. 243: 538-544.
6. Sugimoto, H., et al. 1999. Crystal structure of human D-dopachrome tautomerase, a homologue of macrophage migration inhibitory factor, at 1.54 A resolution. Biochemistry 38: 3268-3279.

CHROMOSOMAL LOCATION

Genetic locus: Ddt (mouse) mapping to 10 C1.

PRODUCT

DDT 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 DDT shRNA Plasmid (m): sc-142919-SH and DDT shRNA (m) Lentiviral Particles: sc-142919-V as alternate gene silencing products.

For independent verification of DDT (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-142919A, sc-142919B and sc-142919C.

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

DDT siRNA (m) is recommended for the inhibition of DDT 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.

RT-PCR REAGENTS

Semi-quantitative RT-PCR may be performed to monitor DDT gene expression knockdown using RT-PCR Primer: DDT (m)-PR: sc-142919-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. Yoshihisa, Y., et al. 2021. Overexpression of D-dopachrome tautomerase increases ultraviolet B irradiation-induced skin tumorigenesis in mice. FASEB J. 35: e21671.

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.