SANTA CRUZ BIOTECHNOLOGY, INC.

IL-1β siRNA (h): sc-39615

BACKGROUND

Two forms of interleukin-1, designated IL-1α and IL-1β, have been described. Although encoded by distinct genes and exhibiting roughly only 25% sequence identity, IL-1α and IL-1β bind to the same receptor and seem to elicit similar biological responses. IL-1 production is generally thought to be associated with inflammation, but it has also been shown to be expressed during kidney development, thymocyte differentiation and cartilage degradation. IL-1 plays a critical role in the regulation of immune response and inflammation, acting as an activator of T and B lymphocytes and natural killer (NK) cells. In T cells, IL-1 stimulates the production of IL-2 and selectively inhibits IL-4 expression. IL-1 induces B cell proliferation and maturation, and immunoglobulin synthesis. NK cells require IL-1β for production of the anti- pathogen IFN-γ. IL-1 has also been implicated in several pathological conditions including rheumatoid arthritis, inflammatory bowel disease and atherosclerosis.

REFERENCES

1. Auron, P.E., et al. 1984. Nucleotide sequence of human monocyte interleukin-1 precursor cDNA. Proc. Natl. Acad. Sci. USA 81: 7907-7911.
2. March, C.J., et al. 1985. Cloning, sequence and expression of two distinct human interleukin-1 complementary DNAs. Nature 315: 641-647.
3. Dinarello, C.A. 1991. Interleukin-1 and interleukin-1 antagonism. Blood 77: 1627-1652.

CHROMOSOMAL LOCATION

Genetic locus: IL1B (human) mapping to 2q13.

PRODUCT

IL-1β 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 IL-1β shRNA Plasmid (h): sc-39615-SH and IL-1β shRNA (h) Lentiviral Particles: sc-39615-V as alternate gene silencing products.

For independent verification of IL-1β (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-39615A, sc-39615B and sc-39615C.

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

IL-1β siRNA (h) is recommended for the inhibition of IL-1β 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

IL-1β (B122): sc-12742 is recommended as a control antibody for monitoring of IL-1β 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 IL-1β gene expression knockdown using RT-PCR Primer: IL-1β (h)-PR: sc-39615-PR (20 µl, 482 bp). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

SELECT PRODUCT CITATIONS

1. Kim, Y.H., et al. 2010. Nitric oxide induction of IRE1-α-dependent CREB phosphorylation in human glioma cells. Nitric Oxide 23: 112-120.
2. Chen, M.F., et al. 2012. Role of interleukin 1β in esophageal squamous cell carcinoma. J. Mol. Med. 90: 89-100.
3. Yun, M.R., et al. 2014. Visfatin contributes to the differentiation of monocytes into macrophages through the differential regulation of inflammatory cytokines in THP-1 cells. Cell. Signal. 26: 705-715.
4. Venkatasubramanian, S., et al. 2015. A rho GDP dissociation inhibitor produced by apoptotic T-cells inhibits growth of *Mycobacterium tuberculosis*. PLoS Pathog. 11: e1004617.
5. Zhu, D.D., et al. 2016. Interleukin-1β mediates high glucose induced phenotypic transition in human aortic endothelial cells. Cardiovasc. Diabetol. 15: 42.
6. Jung, T.W., et al. 2019. Phosphatidylcholine causes adipocyte-specific lipolysis and apoptosis in adipose and muscle tissues. PLoS ONE 14: e0214760.
7. Cheng, C.Y., et al. 2022. CORM-2 prevents human gingival fibroblasts from lipoteichoic acid-induced VCAM-1 and ICAM-1 expression by inhibiting TLR2/MyD88/TRAF6/PI3K/Akt/ROS/NFκB signaling pathway. Biochem. Pharmacol. 201: 115099.

RESEARCH USE

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