SANTA CRUZ BIOTECHNOLOGY, INC.

TNFα siRNA (h): sc-37216

BACKGROUND

Tumor necrosis factor β (TNFβ), also known as lymphotoxin, is a pleiotropic cytokine. TNFα, also known as cachectin, is a smaller cytokine that binds to the same receptors, producing a vast array of effects similar to those of TNFβ. TNFβ and TNFα share 30% amino acid homology and have similar biological activities. TNFβ is produced by activated lymphocytes, including $CD4^+$ T helper cell type 1 lymphocytes, $CD8^+$ lymphocytes and certain B lymphoblastoid cell lines. TNFα is produced by several different cell types, which include lymphocytes, neutrophils and macrophages. TNFα and TNFβ can modulate many immune and inflammatory functions, while having the ability to inhibit tumor growth. Target tumor cells must express TNF receptors 1 and 2 to be killed, with the p55 receptor mediating the cytotoxic response.

CHROMOSOMAL LOCATION

Genetic locus: TNF (human) mapping to 6p21.33.

PRODUCT

TNFα 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 TNFα shRNA Plasmid (h): sc-37216-SH and TNFα shRNA (h) Lentiviral Particles: sc-37216-V as alternate gene silencing products.

For independent verification of TNFα (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-37216A, sc-37216B and sc-37216C.

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

TNFα siRNA (h) is recommended for the inhibition of TNFα 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

TNFα (C-4): sc-133192 is recommended as a control antibody for monitoring of TNFα 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 TNFα gene expression knockdown using RT-PCR Primer: TNFα (h)-PR: sc-37216-PR (20 µl, 506 bp). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

SELECT PRODUCT CITATIONS

1. Pandey, A.K., et al. 2010. Gene expression profiling and network analysis reveals lipid and steroid metabolism to be the most favored by TNFα in Hep G2 cells. PLoS ONE 5: e9063.
2. Venkatasubramanian, S., et al. 2015. A Rho GDP dissociation inhibitor produced by apoptotic T-cells inhibits growth of *Mycobacterium tuberculosis*. PLoS Pathog. 11: e1004617.
3. Yan, H.Q., et al. 2016. Ataxia-telangiectasia mutated activation mediates tumor necrosis factor-α induced MMP-13 up-regulation and metastasis in lung cancer cells. Oncotarget 7: 62070-62083.
4. Zhao, R., et al. 2017. Reduced monocyte adhesion to aortae of diabetic plasminogen activator inhibitor-1 knockout mice. Inflamm. Res. 66: 783-792.
5. Yamaguchi, R., et al. 2018. Di-(2-ethylhexyl) phthalate suppresses IL-12p40 production by GM-CSF-dependent macrophages via the PPARα/TNFAIP3/TRAF6 axis after lipopolysaccharide stimulation. Hum. Exp. Toxicol. 37: 596-607.
6. Fujiwara-Tani, R., et al. 2018. Anti-claudin-4 extracellular domain antibody enhances the antitumoral effects of chemotherapeutic and antibody drugs in colorectal cancer. Oncotarget 9: 37367-37378.
7. Yamaguchi, R., et al. 2019. Di-(2-ethylhexyl) phthalate promotes release of tissue factor-bearing microparticles from macrophages via the TGFβ1/Smad/PAI-1 signaling pathway. Am. J. Med. Sci. 357: 492-506.
8. Jung, T.W., et al. 2019. Phosphatidylcholine causes adipocyte-specific lipolysis and apoptosis in adipose and muscle tissues. PLoS ONE 14: e0214760.
9. Zheng, Z., et al. 2019. S1P promotes inflammation-induced tube formation by HLECs via the S1PR1/NFκB pathway. Int. Immunopharmacol. 66: 224-235.
10. Yu, W., et al. 2021. Mechanical force-driven TNFα endocytosis governs stem cell homeostasis. Bone Res. 8: 44.

RESEARCH USE

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