SANTA CRUZ BIOTECHNOLOGY, INC.

Dectin-1 siRNA (m): sc-63277

BACKGROUND

The human β-glucan receptor (Dectin-1) is a small type II transmembrane receptor with a single extracellular carbohydrate recognition (lectin-like) domain and immunoreceptor tyrosine activation motif in its cytoplasmic tail. Dectin-1 exists as two major isoforms (A and B) which differ by the presence of a stalk region separating the carbohydrate recogition domain from the transmembrane region. The primary function of Dectin-1 is to enable β-glucan-dependent, non-opsonic recognition of zymosan and other yeast-derived particles by primary macrophages. Dectin-1 also binds T-lymphocytes at a site distinct from the β-glucan binding site, indicating its ability to recognize both endogenous and exogenous ligands. Human Dectin-1B is expressed on the surfaces of several dendritic cell subpopulations during their development from peripheral blood monocytes and is also expressed on the surface of myeloid cell populations, specifically the monocyte/macrophage and neutrophil lineages. Dectin-1 is a target for examining the immunomodulatory properties of β-glucans for therapeutic drug design.

REFERENCES

1. Willment, J.A., et al. 2001. Characterization of the human β-glucan receptor and its alternatively spliced isoforms. J. Biol. Chem. 276: 43818-43823.
2. Brown, G.D., et al. 2002. Dectin-1 is a major β-glucan receptor on macrophages. J. Exp. Med. 196: 407-412.

CHROMOSOMAL LOCATION

Genetic locus: Clec7a (mouse) mapping to 6 F3.

PRODUCT

Dectin-1 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 Dectin-1 shRNA Plasmid (m): sc-63277-SH and Dectin-1 shRNA (m) Lentiviral Particles: sc-63277-V as alternate gene silencing products.

For independent verification of Dectin-1 (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-63277A, sc-63277B and sc-63277C.

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

Dectin-1 siRNA (m) is recommended for the inhibition of Dectin-1 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

Dectin-1 (15Y9): sc-73897 is recommended as a control antibody for monitoring of Dectin-1 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 Dectin-1 gene expression knockdown using RT-PCR Primer: Dectin-1 (m)-PR: sc-63277-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. Kim, T.S., et al. 2014. *Mycobacterium massiliense* induces inflammatory responses in macrophages through Toll-like receptor 2 and c-Jun N-terminal kinase. J. Clin. Immunol. 34: 212-223.
2. Yuan, K., et al. 2017. Dectin-1 is essential for IL-1β production through JNK activation and apoptosis in *Aspergillus fumigatus* keratitis. Int. Immunopharmacol. 52: 168-175.
3. Che, C.Y., et al. 2018. Regulation of lipoxygenase-1 and Dectin-1 on interleukin-10 in mouse *Aspergillus fumigatus* keratitis. Int. J. Ophthalmol. 11: 905-909.
4. Miyazaki, Y., et al. 2019. The cooperative induction of macrophage activation by fucoidan derived from *Cladosiphon okamuranus* and β-glucan derived from *Saccharomyces cerevisiae*. Biochem. Biophys. Res. Commun. 516: 245-250.
5. Iitsuka, H., et al. 2020. Immunostimulatory effects of cell wall-based nanoparticles in boiled *Glycyrrhizae* radix water extracts involves TLR4. Biomed. Rep. 12: 303-308.
6. Kim, S., et al. 2020. Oxidized LDL induces vimentin secretion by macrophages and contributes to atherosclerotic inflammation. J. Mol. Med. 98: 973-983.
7. Wang, Y., et al. 2022. Clec7a expression in inflammatory macrophages orchestrates progression of acute kidney injury. Front. Immunol. 13: 1008727.

RESEARCH USE

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