SANTA CRUZ BIOTECHNOLOGY, INC.

Dectin-1 siRNA (h): sc-63276

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.
3. Gordon, S. 2002. Pattern recognition receptors: doubling up for the innate immune response. Cell 111: 927-930.
4. Grunebach, F., et al. 2002. Molecular and functional characterization of human Dectin-1. Exp. Hematol. 30: 1309-1315.
5. Taylor, P.R., et al. 2002. The β-glucan receptor, Dectin-1, is predominantly expressed on the surface of cells of the monocyte/macrophage and neutrophil lineages. J. Immunol. 169: 3876-3882.

CHROMOSOMAL LOCATION

Genetic locus: CLEC7A (human) mapping to 12p13.2.

PRODUCT

Dectin-1 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 Dectin-1 shRNA Plasmid (h): sc-63276-SH and Dectin-1 shRNA (h) Lentiviral Particles: sc-63276-V as alternate gene silencing products.

For independent verification of Dectin-1 (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-63276A, sc-63276B and sc-63276C.

PROTOCOLS

See our web site at www.scbt.com for detailed protocols and support products.

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 (h) is recommended for the inhibition of Dectin-1 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.

RT-PCR REAGENTS

Semi-quantitative RT-PCR may be performed to monitor Dectin-1 gene expression knockdown using RT-PCR Primer: Dectin-1 (h)-PR: sc-63276-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. Lee, H.M., et al. 2009. Dectin-1 is inducible and plays an essential role for mycobacteria-induced innate immune responses in airway epithelial cells. J. Clin. Immunol. 29: 795-805.
2. Song, J.S., et al. 2015. Zymosan and PMA activate the immune responses of Mutz3-derived dendritic cells synergistically. Immunol. Lett. 167: 41-46.
3. Benmoussa, K., et al. 2017. P17, an original host defense peptide from ant venom, promotes antifungal activities of macrophages through the induction of C-type lectin receptors dependent on LTB4-mediated PPARγ activation. Front. Immunol. 8: 1650.
4. Park, S.Y., et al. 2022. House dust mite-induced Akt-ERK1/2-C/EBP β pathway triggers CCL20-mediated inflammation and epithelial-mesenchymal transition for airway remodeling. FASEB J. 36: e22452.

RESEARCH USE

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