SANTA CRUZ BIOTECHNOLOGY, INC.

SOD-1 siRNA (h): sc-36523

BACKGROUND

Cu-Zn superoxide dismutase-1 (SOD-1) is a well characterized cytosolic scavenger of oxygen free radicals that requires copper and zinc binding to potentiate its enzymatic activity. Enzymatically, SOD-1 facilitates the dismutation of oxygen radicals to hydrogen peroxide and also catalyzes pro-oxidant reactions, which include the peroxidase activity and hydroxyl radical generating activity. SOD-1 is ubiquitously expressed in somatic cells and functions as a homodimer. Defects in the gene encoding SOD-1 have been implicated in the progression of neurological diseases, including amyotrophic lateral sclerosis (ALS), a neurodegenerative disease characterized by the loss of spinal motor neurons, Down syndrome and Alzheimer's disease. In familial ALS, several mutations in SOD-1 predominate, resulting in the loss of zinc binding, the loss of scavenging activity of SOD-1, and correlate with an increase in neurotoxicity and motor neuron death.

REFERENCES

1. Levanon, D., et al. 1985. Architecture and anatomy of the chromosomal locus in human chromosome 21 encoding the Cu-Zn superoxide dismutase. EMBO J. 4: 77-84.
2. Bewley, G.C. 1988. cDNA and deduced amino acid sequence of murine Cu-Zn superoxide dismutase. Nucleic Acids Res. 16: 2728.
3. Beckman, J.S., et al. 1993. ALS, SOD and peroxynitrite. Nature 364: 584.

CHROMOSOMAL LOCATION

Genetic locus: SOD1 (human) mapping to 21q22.11.

PRODUCT

SOD-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 SOD-1 shRNA Plasmid (h): sc-36523-SH and SOD-1 shRNA (h) Lentiviral Particles: sc-36523-V as alternate gene silencing products.

For independent verification of SOD-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-36523A, sc-36523B and sc-36523C.

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

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

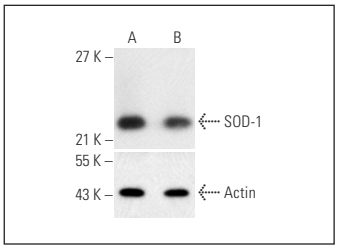
GENE EXPRESSION MONITORING

SOD-1 (G-11): sc-17767 is recommended as a control antibody for monitoring of SOD-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).

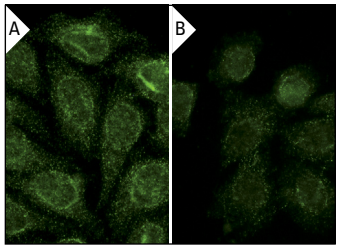
RT-PCR REAGENTS

Semi-quantitative RT-PCR may be performed to monitor SOD-1 gene expression knockdown using RT-PCR Primer: SOD-1 (h)-PR: sc-36523-PR (20 µl, 412 bp). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

DATA



SOD-1 siRNA (h): sc-36523. Western blot analysis of SOD-1 expression in non-transfected control (**A**) and SOD-1 siRNA transfected (**B**) HeLa cells. Blot probed with SOD-1 (G-11): sc-17767. Actin (I-19): sc-1616 used as specificity and loading control.



SOD-1 siRNA (h): sc-36523. Immunofluorescence staining of methanol-fixed, control HeLa (**A**) and SOD-1 siRNA silenced HeLa (**B**) cells showing diminished cytoplasmic staining in the siRNA silenced cells. Cells probed with SOD-1 (FL-154): sc-11407.

SELECT PRODUCT CITATIONS

1. Khouri, R., et al. 2009. IFN-β impairs superoxide-dependent parasite killing in human macrophages: evidence for a deleterious role of SOD1 in cutaneous leishmaniasis. J. Immunol. 182: 2525-2531.
2. Srivastava, S., et al. 2016. Cardioprotective effects of Cu(II)ATSM in human vascular smooth muscle cells and cardiomyocytes mediated by Nrf2 and DJ-1. Sci. Rep. 6: 7.
3. Rosato, B., et al. 2018. Role of FGFR2b expression and signaling in keratinocyte differentiation: sequential involvement of PKCδ and PKCα. Cell Death Dis. 9: 565.

RESEARCH USE

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