SANTA CRUZ BIOTECHNOLOGY, INC.

SOD-1 siRNA (m): sc-36522

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.
4. Orrell, R., et al. 1995. A novel SOD mutant and ALS. Nature 374: 504-505.
5. Singh, R.J., et al. 1998. Reexamination of the mechanism of hydroxyl radical adducts formed from the reaction between familial amyotrophic lateral sclerosis-associated Cu-Zn superoxide dismutase mutants and H_2O_2. Proc. Natl. Acad. Sci. USA 95: 6675-6680.
6. Shaw, C.E., et al. 1998. Mutations in all five exons of SOD-1 may cause ALS. Ann. Neurol. 43: 390-394.
7. Bruijn, L.I., et al. 1998. Aggregation and motor neuron toxicity of an ALS-linked SOD-1 mutant independent from wild-type SOD-1. Science 281: 1851-1854.

CHROMOSOMAL LOCATION

Genetic locus: Sod1 (mouse) mapping to 16 C3.3.

PRODUCT

SOD-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 SOD-1 shRNA Plasmid (m): sc-36522-SH and SOD-1 shRNA (m) Lentiviral Particles: sc-36522-V as alternate gene silencing products.

For independent verification of SOD-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-36522A, sc-36522B and sc-36522C.

RESEARCH USE

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

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 (m) is recommended for the inhibition of SOD-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

SOD-1 (B-1): sc-271014 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 (m)-PR: sc-36522-PR (20 µl, 417 bp). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

SELECT PRODUCT CITATIONS

1. Tang, D., et al. 2011. High mobility group box 1 (HMGB1) activates an autophagic response to oxidative stress. Antioxid. Redox Signal. 15: 2185-2195.
2. Wu, Y.L., et al. 2019. Microcystin-LR promotes necroptosis in primary mouse hepatocytes by overproducing reactive oxygen species. Toxicol. Appl. Pharmacol. 377: 114626.

PROTOCOLS

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