SANTA CRUZ BIOTECHNOLOGY, INC.

catalase siRNA (h): sc-45330

BACKGROUND

Catalase is a peroxisome specific marker protein belonging to the catalase family. Defects in the gene encoding for the catalase protein can cause acatalasia, a disease characterized by the absence of catalase activity in red cells and associated with ulcerating oral lesions. Catalase is also an important regulator of oxidative stress and inflammation, and may contribute to the development of rheumatoid arthritis. Catalase, which can form a homotetramer, is found in all nearly all aerobically respiring organisms and functions in protecting cells from the toxic effects of hydrogen peroxide.

REFERENCES

1. Aubourg, P., et al. 1993. Pseudo infantile Refsum's disease: catalase deficient peroxisomal particles with partial deficiency of plasmalogen synthesis and oxidation of fatty acids. Pediatr. Res. 34: 270-276.
2. Rodriguez-Esparragón, F.J., et al. 2003. Peroxisome proliferator-activated receptor-γ2-Pro12Ala and endothelial nitric oxide synthase-4a/bgene polymorphisms are associated with essential hypertension. J. Hypertens. 21: 1649-1655.
3. Rosmond, R., et al. 2003. The Pro12Ala PPARγ2 gene missense mutation is associated with obesity and Insulin resistance in Swedish middle-aged men. Diabetes Metab. Res. Rev. 19: 159-163.

CHROMOSOMAL LOCATION

Genetic locus: CAT (human) mapping to 11p13.

PRODUCT

catalase 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 catalase shRNA Plasmid (h): sc-45330-SH and catalase shRNA (h) Lentiviral Particles: sc-45330-V as alternate gene silencing products.

For independent verification of catalase (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-45330A, sc-45330B and sc-45330C.

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

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

catalase (H-9): sc-271803 is recommended as a control antibody for monitoring of catalase 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).

To ensure optimal results, the following support reagents are recommended: 1) Western Blotting: use m-IgGκ BP-HRP: sc-516102 or m-IgGκ BP-HRP (Cruz Marker): sc-516102-CM (dilution range: 1:1000-1:10000), Cruz Marker™ Molecular Weight Standards: sc-2035, UltraCruz® Blocking Reagent: sc-516214 and Western Blotting Luminol Reagent: sc-2048. 2) Immunofluorescence: use m-IgGκ BP-FITC: sc-516140 or m-IgGκ BP-PE: sc-516141 (dilution range: 1:50-1:200) with UltraCruz® Mounting Medium: sc-24941 or UltraCruz® Hard-set Mounting Medium: sc-359850.

RT-PCR REAGENTS

Semi-quantitative RT-PCR may be performed to monitor catalase gene expression knockdown using RT-PCR Primer: catalase (h)-PR: sc-45330-PR (20 µl, 429 bp). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

SELECT PRODUCT CITATIONS

1. Ota, H., et al. 2010. Induction of endothelial nitric oxide synthase, SIRT1, and catalase by statins inhibits endothelial senescence through the Akt pathway. Arterioscler. Thromb. Vasc. Biol. 30: 2205-2211.
2. Kuwahara, Y., et al. 2016. The involvement of mitochondrial membrane potential in cross-resistance between radiation and docetaxel. Int. J. Radiat. Oncol. Biol. Phys. 96: 556-565.
3. Patitucci, T.N. and Ebert, A.D. 2016. SMN deficiency does not induce oxidative stress in SMA iPSC-derived astrocytes or motor neurons. Hum. Mol. Genet. 25: 514-523.
4. Lee, J.N., et al. 2018. Catalase inhibition induces pexophagy through ROS accumulation. Biochem. Biophys. Res. Commun. 501: 696-702.
5. Sobczak, M., et al. 2021. LSD1 facilitates pro-inflammatory polarization of macrophages by repressing catalase. Cells 10: 2465.

RESEARCH USE

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