SANTA CRUZ BIOTECHNOLOGY, INC.

Heme Oxygenase 1 siRNA (h): sc-35554

BACKGROUND

Heme oxygenases are microsomal enzymes that cleave heme to produce the antioxidant biliverdin, inorganic iron and carbon monoxide (CO). The activity of Heme Oxygenase 1 (HO-1), also designated HSP 32, is highly inducible in response to numerous stimuli, including heme, heavy metals, hormones and oxidative stress. Heme Oxygenase 2, in contrast, appears to be constituitively expressed in mammalian tissues. Heme Oxygenase 2 is involved in the production of carbon monoxide (CO) in brain, where CO is thought to act as a neurotransmitter. The CO signaling system closely parallels the signaling pathway involving nitric oxide and regulation of the two systems is closely linked. Heme Oxygenase 3 is found in the spleen, liver, thymus, prostate, heart, kidney, brain and testis. A poor heme catalyst, Heme Oxygenase 3 has two heme regulatory motifs that may be involved in heme binding.

REFERENCES

1. Maines, M.D. 1988. Heme oxygenase: function, multiplicity, regulatory mechanisms and clinical applications. FASEB J. 2: 2557-2568.
2. Rodgers, P.A., et al. 1990. Developmental biology of heme oxygenase. Clin. Perinatol. 17: 275-291.

CHROMOSOMAL LOCATION

Genetic locus: HMOX1 (human) mapping to 22q12.3.

PRODUCT

Heme Oxygenase 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 Heme Oxygenase 1 shRNA Plasmid (h): sc-35554-SH and Heme Oxygenase 1 shRNA (h) Lentiviral Particles: sc-35554-V as alternate gene silencing products.

For independent verification of Heme Oxygenase 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-35554A, sc-35554B and sc-35554C.

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

Heme Oxygenase 1 siRNA (h) is recommended for the inhibition of Heme Oxygenase 1 expression in human cells.

RESEARCH USE

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

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

Heme Oxygenase 1 (A-3): sc-136960 is recommended as a control antibody for monitoring of Heme Oxygenase 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 Heme Oxygenase 1 gene expression knockdown using RT-PCR Primer: Heme Oxygenase 1 (h)-PR: sc-35554-PR (20 µl, 443 bp). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

SELECT PRODUCT CITATIONS

1. Pae, H.O, et al. 2005. A molecular cascade showing Nitric Oxide-Heme Oxygenase-1-Vascular endothelial growth factor-interleukin-8 sequence in human endothelial cells. Endocrinology 146: 2229-2238.
2. Lee, S.E., et al. 2012. Induction of Heme Oxygenase 1 inhibits cell death in crotonaldehyde-stimulated Hep G2 cells via the PKC-δ-p38-Nrf2 pathway. PLoS ONE 7: e41676.
3. Pan, L.L., et al. 2013. A novel compound derived from danshensu inhibits apoptosis via upregulation of Heme Oxygenase 1 expression in SH-SY5Y cells. Biochim. Biophys. Acta 1830: 2861-2871.
4. Jiang, G., et al. 2014. Gastrodin protects against MPP^+-induced oxidative stress by up regulates Heme Oxygenase 1 expression through p38 MAPK/Nrf2 pathway in human dopaminergic cells. Neurochem. Int. 75: 79-88.
5. Li, Y.H., et al. 2015. Fibroblast growth factor 10 protects neuron against oxygen-glucose deprivation injury through inducing Heme Oxygenase 1. Biochem. Biophys. Res. Commun. 456: 225-231.
6. Chao, H.H., et al. 2016. Nicorandil inhibits cyclic strain-induced interleukin-8 expression in human umbilical vein endothelial cells. Pharmacology 98: 42-50.

PROTOCOLS

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