SANTA CRUZ BIOTECHNOLOGY, INC.

Heme Oxygenase 1 siRNA (m): sc-35555

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, multiplicty, regulatory mechanisms, and clinical applications. FASEB J. 2: 2557-2568.
2. Rodgers, P.A. and Stevenson, D.K. 1990. Developmental biology of Heme Oxygenase. Clin. Perinatol. 17: 275-291.
3. Alam, J., et al. 1994. Isolation and characterization of the mouse Heme Oxygenase 1 gene. Distal 5' sequences are required for induction by heme or heavy metals. J. Biol. Chem. 269: 1001-1009.

CHROMOSOMAL LOCATION

Genetic locus: Hmox1 (mouse) mapping to 8 C1.

PRODUCT

Heme Oxygenase 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 Heme Oxygenase 1 shRNA Plasmid (m): sc-35555-SH and Heme Oxygenase 1 shRNA (m) Lentiviral Particles: sc-35555-V as alternate gene silencing products.

For independent verification of Heme Oxygenase 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-35555A, sc-35555B and sc-35555C.

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 (m) is recommended for the inhibition of Heme Oxygenase 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

Heme Oxygenase 1 (F-4): sc-390991 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 (m)-PR: sc-35555-PR (20 µl, 518 bp). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

SELECT PRODUCT CITATIONS

1. Chae, H.J., et al. 2006. Carbon monoxide and nitric oxide protect against tumor necrosis factor-α-induced apoptosis in osteoblasts: HO-1 is necessary to mediate the protection. Clin. Chim. Acta 365: 270-278.
2. Jung, I.D., et al. 2010. Induction of indoleamine 2,3-dioxygenase expression via Heme Oxygenase 1-dependant pathway during murine dendritic cell maturation. Biochem. Pharmacol. 80: 491-505.
3. Harada, N., et al. 2011. Nrf2 regulates ferroportin 1-mediated iron efflux and counteracts lipopolysaccharide-induced ferroportin 1 mRNA suppression in macrophages. Arch. Biochem. Biophys. 508: 101-109.
4. Kim, S.J., et al. 2015. Bucillamine prevents cisplatin-induced ototoxicity through induction of glutathione and antioxidant genes. Exp. Mol. Med. 47: e142.
5. Park, S.Y., et al. 2016. Anti-neuroinflammatory effect of emodin in LPS-stimulated microglia: involvement of AMPK/Nrf2 activation. Neurochem. Res. 41: 2981-2992.
6. Wang, L., et al. 2017. Epithelial HO-1/Stat3 affords the protection of subanesthetic isoflurane against zymosan-induced lung injury in mice. Oncotarget 8: 54889-54903.
7. Park, S.Y., et al. 2018. *Petasites japonicus* bakkenolide B inhibits lipopolysaccharide-induced pro-inflammatory cytokines via AMPK/Nrf2 induction in microglia. Int. J. Mol. Med. 41: 1683-1692.

RESEARCH USE

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