SANTA CRUZ BIOTECHNOLOGY, INC.

Heme Oxygenase 2 siRNA (h): sc-35556

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.
4. Maines, M.D. 1997. The Heme Oxygenase system; a regulator of second messenger gases. Annu. Rev. Pharmacol. Toxicol. 37: 517-554.
5. McCoubrey, W.K., Jr., et al. 1997. Isolation and characterization of a cDNA from the rat brain that encodes hemoprotein Heme Oxygenase 3. Eur. J. Biochem. 247: 725-732.
6. Snyder, S.H., et al. 1998. Nitric oxide and carbon monoxide: parallel roles as neural messengers. Brain Res. Brain Res. Rev. 26: 167-175.
7. Motterlini, R., et al. 1998. Heme Oxygenase 1-derived carbon monoxide contributes to the suppression of acute hypertensive responses *in vivo*. Circ. Res. 83: 568-577.

CHROMOSOMAL LOCATION

Genetic locus: HMOX2 (human) mapping to 16p13.3.

PRODUCT

Heme Oxygenase 2 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 2 shRNA Plasmid (h): sc-35556-SH and Heme Oxygenase 2 shRNA (h) Lentiviral Particles: sc-35556-V as alternate gene silencing products.

For independent verification of Heme Oxygenase 2 (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-35556A, sc-35556B and sc-35556C.

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 2 siRNA (h) is recommended for the inhibition of Heme Oxygenase 2 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

Heme Oxygenase 2 (B-3): sc-17786 is recommended as a control antibody for monitoring of Heme Oxygenase 2 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 Heme Oxygenase 2 gene expression knockdown using RT-PCR Primer: Heme Oxygenase 2 (h)-PR: sc-35556-PR (20 µl, 452 bp). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

SELECT PRODUCT CITATIONS

1. Halilovic, A., et al. 2011. Knockdown of Heme Oxygenase 2 impairs corneal epithelial cell wound healing. J. Cell. Physiol. 226: 1732-1740.

RESEARCH USE

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