SANTA CRUZ BIOTECHNOLOGY, INC.

Selenoprotein R siRNA (h): sc-45574

BACKGROUND

Selenium is an essential trace element that is incorporated as selenocysteine into the primary structure of selenoproteins. Nutritional deficiency of selenium decreases selenoprotein concentrations and leads to pathologic conditions. Most of the known selenoproteins are members of the glutathione peroxidase or iodothyronine deiodinase families. Selenoprotein P (SEPP1) is a major selenoprotein that is not a member of those families. It is an extracellular glycoprotein that is present in several isoforms and is the only selenoprotein known to contain multiple selenocysteine residues. SECIS elements form stem-loop structures in the 3' untranslated regions (UTR) of eukaryotic mRNAs that encode selenoproteins. The Selenoprotein W SECIS elements contain an additional highly conserved base-paired stem that may prevent inappropriate selenocysteine incorporation at the UGA stop codons. Selenoprotein R, also designated methionine-R-sulfoxide reductase or Selenoprotein X1, is a zinc binding protein. The gene encoding for Selenoprotein R contains selenocysteine, which is encoded by the usual stop codon TGA at the active site. Selenoprotein R may play a role in protection against oxidative stress.

REFERENCES

1. Hill, K.E., et al. 1993. Conserved nucleotide sequences in the open reading frame and 3' untranslated region of Selenoprotein P mRNA. Proc. Natl. Acad. Sci. USA 90: 537-541.
2. Chittum, H.S., et al. 1996. Multiple forms of Selenoprotein P in rat plasma. Arch. Biochem. Biophys. 325: 124-128.
3. Hill, K.E., et al. 1996. Human Selenoprotein P gene maps to 5q31. Genomics 36: 550-551.
4. Kryukov, G.V., et al. 1999. New mammalian selenocysteine-containing proteins identified with an algorithm that searches for selenocysteine insertion sequence elements. J. Biol. Chem. 274: 33888-33897.
5. Kryukov, G.V., et al. 2002. Selenoprotein R is a zinc-containing stereo-specific methionine sulfoxide reductase. Proc. Natl. Acad. Sci. USA 99: 4245-4250.
6. Gromer, S., et al. 2005. Human selenoproteins at a glance. Cell. Mol. Life Sci. 62: 2414-2437.

CHROMOSOMAL LOCATION

Genetic locus: MSRB1 (human) mapping to 16p13.3.

PRODUCT

Selenoprotein R 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 Selenoprotein R shRNA Plasmid (h): sc-45574-SH and Selenoprotein R shRNA (h) Lentiviral Particles: sc-45574-V as alternate gene silencing products.

For independent verification of Selenoprotein R (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-45574A, sc-45574B and sc-45574C.

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

Selenoprotein R siRNA (h) is recommended for the inhibition of Selenoprotein R 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

Selenoprotein R (QA-V7): sc-135558 is recommended as a control antibody for monitoring of Selenoprotein R 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 Selenoprotein R gene expression knockdown using RT-PCR Primer: Selenoprotein R (h)-PR: sc-45574-PR (20 µl, 470 bp). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

RESEARCH USE

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

PROTOCOLS

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