SANTA CRUZ BIOTECHNOLOGY, INC.

TRP14 siRNA (h): sc-93898

BACKGROUND

Thioredoxins comprise a family of small proteins that, by catalyzing the oxidation of disulfide bonds, participate in redox reactions throughout the cell. Proteins that contain thioredoxin domains do not necessarily convey the oxidative properties of thioredoxins, but generally function as disulfide isomerases that enzymatically rearrange disulfide bonds found in various proteins. TRP14 (thioredoxin-related protein 14), also known as Protein 42-9-9, TXNL5 or TXNDC17, is a 123 amino acid cytoplasmic protein that is ubiquitously expressed. Considered a disulfide reductase, TRP14 may participate in various redox reactions through the reversible oxidation of its active center dithiol to a disulfide and catalyze dithiol-disulfide exchange reactions. TRP14 modulates TNFα signaling and NFκB activation. Suggested to have peroxidase activity, TRP14 may contribute to the elimination of cellular hydrogen peroxide. TRP14 is reduced by TrXR1 and interacts with DYNLL1.

REFERENCES

1. Powis, G. and Montfort, W.R. 2001. Properties and biological activities of thioredoxins. Annu. Rev. Biophys. Biomol. Struct. 30: 421-455.
2. Jeong, W., et al. 2004. Identification and characterization of TRP14, a thioredoxin-related protein of 14 kDa. New insights into the specificity of thioredoxin function. J. Biol. Chem. 279: 3142-3150.
3. Jeong, W., et al. 2004. Roles of TRP14, a thioredoxin-related protein in tumor necrosis factor α signaling pathways. J. Biol. Chem. 279: 3151-3159.
4. Woo, J.R., et al. 2004. Structural basis of cellular redox regulation by human TRP14. J. Biol. Chem. 279: 48120-48125.
5. Nakamura, H. 2005. Thioredoxin and its related molecules: update 2005. Antioxid. Redox Signal. 7: 823-828.
6. Stefanková, P., et al. 2005. Thioredoxin-structural and functional complexity. Gen. Physiol. Biophys. 24: 3-11.
7. Jiang, S., et al. 2007. Human TRP14 gene homologue from amphioxus *Branchiostoma belcheri:* identification, evolution, expression and functional characterization. J. Anat. 210: 555-564.
8. Jung, Y., et al. 2008. Dynein light chain LC8 negatively regulates NF-κB through the redox-dependent interaction with IκBα. J. Biol. Chem. 283: 23863-23871.
9. Jeong, W., et al. 2009. Thioredoxin-related protein 14, a new member of the thioredoxin family with disulfide reductase activity: Implication in the redox regulation of TNF-α signaling. Free Radic. Biol. Med. 47: 1294-1303.

CHROMOSOMAL LOCATION

Genetic locus: TXNDC17 (human) mapping to 17p13.1.

PROTOCOLS

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

PRODUCT

TRP14 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 TRP14 shRNA Plasmid (h): sc-93898-SH and TRP14 shRNA (h) Lentiviral Particles: sc-93898-V as alternate gene silencing products.

For independent verification of TRP14 (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-93898A, sc-93898B and sc-93898C.

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

TRP14 siRNA (h) is recommended for the inhibition of TRP14 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.

RT-PCR REAGENTS

Semi-quantitative RT-PCR may be performed to monitor TRP14 gene expression knockdown using RT-PCR Primer: TRP14 (h)-PR: sc-93898-PR (20 µl). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

SELECT PRODUCT CITATIONS

1. Zhen, Z., et al. 2017. Suberoylanilide hydroxamic acid sensitizes neuroblastoma to paclitaxel by inhibiting thioredoxin-related protein 14-mediated autophagy. Cancer Sci. 108: 1485-1492.

RESEARCH USE

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