SANTA CRUZ BIOTECHNOLOGY, INC.

ACE2 siRNA (h): sc-41400

BACKGROUND

Angiotensin-converting enzyme (ACE) is a carboxyl-terminal dipeptidyl exopeptidase that converts angiotensin I to the potent vasopressive hormone, angiotensin II. There are two isoforms of ACE, the pulmonary ACEP and the testicular ACET. ACEP is a glycoprotein expressed in vascular endothelial cells of the lung, liver, adrenal cortex, pancreas, kidney and spleen. The ACET isoform is expressed exclusively in adult testis by developing sperm cells, specifically late pachytene spermatocytes. Additionally, ACE inactivates bradykinin, a vasodepressor peptide, and is involved in blood pressure regulation and fluid/electrolyte homeostasis. ACE2 is the first known human homolog of ACE. Unlike ACE, which is expressed ubiquitously throughout the vasculature, ACE2 is expressed only in cardiac, renal and testicular cells.

CHROMOSOMAL LOCATION

Genetic locus: ACE2 (human) mapping to Xp22.2.

PRODUCT

ACE2 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 ACE2 shRNA Plasmid (h): sc-41400-SH and ACE2 shRNA (h) Lentiviral Particles: sc-41400-V as alternate gene silencing products.

For independent verification of ACE2 (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-41400A, sc-41400B and sc-41400C.

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

ACE2 siRNA (h) is recommended for the inhibition of ACE2 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

ACE2 (E-11): sc-390851 is recommended as a control antibody for monitoring of ACE2 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 ACE2 gene expression knockdown using RT-PCR Primer: ACE2 (h)-PR: sc-41400-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. Chen, Y., et al. 2019. Decreased circulating catestatin levels are associated with coronary artery disease: the emerging anti-inflammatory role. Atherosclerosis 281: 78-88.
2. Palasiewicz, K., et al. 2021. Tofacitinib therapy intercepts macrophage metabolic reprogramming instigated by SARS-CoV-2 spike protein. Eur. J. Immunol. 51: 2330-2340.
3. Hudák, A., et al. 2021. Contribution of syndecans to the cellular entry of SARS-CoV-2. Int. J. Mol. Sci. 22: 5336.
4. Hudák, A., et al. 2022. Syndecan-4 is a key facilitator of the SARS-CoV-2 δ variant's superior transmission. Int. J. Mol. Sci. 23: 796.
5. Umar, S., et al. 2022. Inhibition of IRAK-4 dysregulates SARS-CoV-2 spike protein-induced macrophage inflammatory and glycolytic reprogramming. Cell. Mol. Life Sci. 79: 301.
6. Barrow, K., et al. 2022. H_2S protects from oxidative stress-driven ACE2 expression and cardiac aging. Mol. Cell. Biochem. 477: 1393-1403.
7. Letoha, A., et al. 2023. Exploring the syndecan-mediated cellular internalization of the SARS-CoV-2 omicron variant. Int. J. Mol. Sci. 24: 14140.
8. Aldarondo, D.A., et al. 2023. Nanoparticle endocytosis is driven by monocyte phenotype rather than nanoparticle size under high shear flow conditions. bioRxiv. E-published.

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.