SANTA CRUZ BIOTECHNOLOGY, INC.

PRODH siRNA (h): sc-76252

BACKGROUND

PRODH (proline dehydrogenase), also known as proline oxidase 2 (POX2), is a 516 amino acid protein belonging to the proline oxidase family. Induced during p53-induced apoptosis, PRODH catalyzes the first step in proline degradation by converting proline to δ-1-pyrroline-5-carboxylate. Defects in PRODH are the cause of hyperprolinemia type 1, a disorder characterized by elevated serum proline levels. Defects in PRODH may also be involved in the psychiatric and behavioral phenotypes associated with DiGeorge syndrome. Localized to the mitochondrion matrix, PRODH is expressed at higher levels in lung, brain and skeletal muscle and expressed at lower levels in heart, liver, kidney and pancreas. PRODH exists as two isoforms produced by alternative splicing.

REFERENCES

1. Prata, D.P., et al. 2006. Bipolar 1 disorder is not associated with the RGS4, PRODH, COMT and GRK3 genes. Psychiatr. Genet. 16: 229-230.
2. Afenjar, A., et al. 2007. Early neurological phenotype in 4 children with biallelic PRODH mutations. Brain Dev. 29: 547-552.
3. Raux, G., et al. 2007. Involvement of hyperprolinemia in cognitive and psychiatric features of the 22q11 deletion syndrome. Hum. Mol. Genet. 16: 83-91.
4. Weksberg, R., et al. 2007. Molecular characterization of deletion breakpoints in adults with 22q11 deletion syndrome. Hum. Genet. 120: 837-845.
5. White, T.A., et al. 2007. Structure and kinetics of monofunctional proline dehydrogenase from *Thermus thermophilus*. J. Biol. Chem. 282: 14316-14327.
6. Liu, Y., et al. 2008. Proline oxidase, a p53-induced gene, targets Cox-2/PGE2 signaling to induce apoptosis and inhibit tumor growth in colorectal cancers. Oncogene 27: 6729-6737.
7. Kempf, L., et al. 2008. Functional polymorphisms in PRODH are associated with risk and protection for schizophrenia and fronto-striatal structure and function. PLoS Genet. 4: e1000252.

CHROMOSOMAL LOCATION

Genetic locus: PRODH (human) mapping to 22q11.21.

PRODUCT

PRODH 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 PRODH shRNA Plasmid (h): sc-76252-SH and PRODH shRNA (h) Lentiviral Particles: sc-76252-V as alternate gene silencing products.

For independent verification of PRODH (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-76252A, sc-76252B and sc-76252C.

PROTOCOLS

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

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

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

PRODH (A-11): sc-376401 is recommended as a control antibody for monitoring of PRODH 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 PRODH gene expression knockdown using RT-PCR Primer: PRODH (h)-PR: sc-76252-PR (20 µl, 545 bp). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

SELECT PRODUCT CITATIONS

1. Dash, S., et al. 2021. Activation of proline metabolism maintains ATP levels during cocaine-induced polyADP-ribosylation. Amino Acids. E-published.

RESEARCH USE

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