SANTA CRUZ BIOTECHNOLOGY, INC.

PRODH2 siRNA (h): sc-97351

BACKGROUND

Probable proline dehydrogenase 2 (PRODH2), also known as HSPOX1 or kidney and liver proline oxidase 1, is a 536 amino acid member of the proline oxidase family. The primary function of PRODH2 is to convert proline into δ1-pyrroline-5-carboxylate (P5C). Proline, functioning as a source of glutamate, arginine and tricarboxylic acid cycle intermediates and taking part in shuttling redox equivalents between mitochondria and cytosol, plays a critical role in protein synthe-sis. P5C, with the help of ALDH4A1 (also known as 1-pyrroline-5-carboxylate dehydrogenase or P5CDH), is converted into glutamate, one of the most common neurotransmitters in the brain. The PRODH2 gene maps to chromosome 19q13.12 and mutations in this gene have been associated with increased susceptibility to schizophrenia.

REFERENCES

1. Geraghty, M.T., et al. 1998. Mutations in the δ1-pyrroline 5-carboxylate dehydrogenase gene cause type II hyperprolinemia. Hum. Mol. Genet. 7: 1411-1415.
2. Liu, H., et al. 2002. Genetic variation at the 22q11 PRODH2/DGCR6 locus presents an unusual pattern and increases susceptibility to schizophrenia. Proc. Natl. Acad. Sci. USA 99: 3717-3722.
3. Chakravarti, A. 2002. A compelling genetic hypothesis for a complex disease: PRODH2/DGCR6 variation leads to schizophrenia susceptibility. Proc. Natl. Acad. Sci. USA 99: 4755-4756.
4. Deuschle, K., et al. 2004. The role of δ1-pyrroline-5-carboxylate dehydrogenase in proline degradation. Plant Cell 16: 3413-3425.
5. White, T.A., et al. 2007. Structure and kinetics of monofunctional proline dehydrogenase from *Thermus thermophilus*. J. Biol. Chem. 282: 14316-14327.
6. Zinkstok, J., et al. 2008. Genetic variation in COMT and PRODH is associated with brain anatomy in patients with schizophrenia. Genes Brain Behav. 7: 61-69.
7. Cooper, S.K., et al. 2008. A novel function for hydroxyproline oxidase in apoptosis through generation of reactive oxygen species. J. Biol. Chem. 283: 10485-10492.

CHROMOSOMAL LOCATION

Genetic locus: PRODH2 (human) mapping to 19q13.12.

PRODUCT

PRODH2 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 PRODH2 shRNA Plasmid (h): sc-97351-SH and PRODH2 shRNA (h) Lentiviral Particles: sc-97351-V as alternate gene silencing products.

For independent verification of PRODH2 (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-97351A, sc-97351B and sc-97351C.

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

PRODH2 siRNA (h) is recommended for the inhibition of PRODH2 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 PRODH2 gene expression knockdown using RT-PCR Primer: PRODH2 (h)-PR: sc-97351-PR (20 µl). 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.