SANTA CRUZ BIOTECHNOLOGY, INC.

CYP2R1 siRNA (m): sc-60482

BACKGROUND

P450 enzymes constitute a family of monooxygenase enzymes that are involved in the metabolism of a wide array of endogenous and xenobiotic compounds. There are currently 57 known active cytochrome P450 (CYP) genes and 58 known pseudogenes present in the human genome. CYP2R1 is a 501 amino acid protein which belongs to the CYP2 family of cytochrome P450 proteins. These proteins are usually involved in the metabolism of foreign compounds. CYP2R1 acts as a major vitamin D 25-hydroxylase. A homozygous mutation in the CYP2R1 gene eliminates the vitamin D_3 25-hydroxylase activity of the CYP2R1 protein, causing 25-hydroxyvitamin D_3 deficiency. Manifestations of 25-hydroxyvitamin D_3 deficiency include abnormally low plasma levels of 25-hydroxyvitamin D_3 and various symptoms of vitamin D deficiency, including skeletal abnormalities, hypophosphatemia and hypocalcemia.

REFERENCES

1. Ponchon, G., et al. 1969. "Activation" of vitamin D by the liver. J. Clin. Invest. 48: 2032-2037.
2. Online Mendelian Inheritance in Man, OMIM™. 2002. Johns Hopkins University, Baltimore, MD. MIM Number: 608713. World Wide Web URL: http://www.ncbi.nlm.nih.gov/omim/
3. Cheng, J.B., et al. 2004. Genetic evidence that the human CYP2R1 enzyme is a key vitamin D 25-hydroxylase. Proc. Natl. Acad. Sci. USA 101: 7711-7715.
4. Prosser, D.E. and Jones, G. 2004. Enzymes involved in the activation and inactivation of vitamin D. Trends Biochem. Sci. 29: 664-673.
5. Shinkyo, R., et al. 2004. Metabolism of vitamin D by human microsomal CYP2R1. Biochem. Biophys. Res. Commun. 324: 451-457.
6. Choudhary, D., et al. 2005. Expression patterns of mouse and human CYP orthologs (families 1-4) during development and in different adult tissues. Arch. Biochem. Biophys. 436: 50-61.
7. Ingelman-Sundberg, M. 2005. The human genome project and novel aspects of cytochrome P450 research. Toxicol. Appl. Pharmacol. 207: 52-56.
8. Karlgren, M., et al. 2005. Novel extrahepatic cytochrome P450s. Toxicol. Appl. Pharmacol. 207: 57-61.

CHROMOSOMAL LOCATION

Genetic locus: Cyp2r1 (mouse) mapping to 7 F1.

PRODUCT

CYP2R1 siRNA (m) 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 CYP2R1 shRNA Plasmid (m): sc-60482-SH and CYP2R1 shRNA (m) Lentiviral Particles: sc-60482-V as alternate gene silencing products.

For independent verification of CYP2R1 (m) gene silencing results, we also provide the individual siRNA duplex components. Each is available as 3.3 nmol of lyophilized siRNA. These include: sc-60482A, sc-60482B and sc-60482C.

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

CYP2R1 siRNA (m) is recommended for the inhibition of CYP2R1 expression in mouse 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 CYP2R1 gene expression knockdown using RT-PCR Primer: CYP2R1 (m)-PR: sc-60482-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.