SANTA CRUZ BIOTECHNOLOGY, INC.

DIO2 siRNA (h): sc-77148

SANTA CRUZ BIOTECHNOLOGY

The Power to Question

BACKGROUND

DIO2 (deiodinase, iodothyronine, type II), also known as D2, 5DII, SelY, TXDI2 or ITDI2, is a 273 amino acid single-pass selenoprotein that belongs to the iodothyronine deiodinase family and localizes to the membrane. Expressed in muscle, heart, brain, thyroid, placenta and skeletal muscle, DIO2 functions to activate thyroid hormone (TH) by catalyzing the outer ring deiodination of the prohormone thyroxine (T4) to bioactive 3,3',5-triiodothyronine (T3), a reaction that is essential for providing the appropriate levels of T3 during brain development. Overexpression of DIO2 is associated with an increase in thyroidal T3 production in patients with Graves disease and thyroid adenomas, both of which are thyroid disorders. Defects in the gene encoding DIO2 may be associated with osteoarthritis, McCune-Albright syndrome and hypertension. DIO2 is expressed as two alternatively spliced isoforms, designated hDII-α and hDII-β.

REFERENCES

1. Croteau, W., et al. 1996. Cloning of the mammalian type II iodothyronine deiodinase. A selenoprotein differentially expressed and regulated in human and rat brain and other tissues. J. Clin. Invest. 98: 405-417.
2. Online Mendelian Inheritance in Man, OMIM™. 2002. Johns Hopkins University, Baltimore, MD. MIM Number: 601413. World Wide Web URL: http://www.ncbi.nlm.nih.gov/omim/
3. Maia, A.L., et al. 2005. Type 2 iodothyronine deiodinase is the major source of plasma T3 in euthyroid humans. J. Clin. Invest. 115: 2524-2533.
4. Gereben, B. and Salvatore, D. 2005. Pretranslational regulation of type 2 deiodinase. Thyroid 15: 855-864.
5. de Jong, F.J., et al. 2007. The association of polymorphisms in the type 1 and 2 deiodinase genes with circulating thyroid hormone parameters and atrophy of the medial temporal lobe. J. Clin. Endocrinol. Metab. 92: 636-640.
6. Kanou, Y., et al. 2007. Thyroglobulin gene mutations producing defective intracellular transport of thyroglobulin are associated with increased thyroidal type 2 iodothyronine deiodinase activity. J. Clin. Endocrinol. Metab. 92: 1451-1457.

CHROMOSOMAL LOCATION

Genetic locus: DIO2 (human) mapping to 14q31.1.

PRODUCT

DIO2 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 DIO2 shRNA Plasmid (h): sc-77148-SH and DIO2 shRNA (h) Lentiviral Particles: sc-77148-V as alternate gene silencing products.

For independent verification of DIO2 (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-77148A, sc-77148B and sc-77148C.

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

DIO2 siRNA (h) is recommended for the inhibition of DIO2 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 DIO2 gene expression knockdown using RT-PCR Primer: DIO2 (h)-PR: sc-77148-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.