SANTA CRUZ BIOTECHNOLOGY, INC.

DIO3 siRNA (h): sc-77150

BACKGROUND

DIO3 (deiodinase, iodothyronine, type III), also known as D3, 5DIII, TXDI3 or DIOIII, is a single-pass type II membrane protein that belongs to the iodothyronine deiodinase family of proteins. Members of the iodothyronine deiodinase family play an important role in thyroid hormone metabolism. Expressed in placenta and various fetal tissues, DIO3 localizes to the cell membrane and plays an important role regulating the activity of thyroid hormones during morphogenesis. More specifically, DIO3 functions as the major physiologic inactivator of thyroid hormones, catalyzing the inner-ring deiodination (the removal of iodine groups) of 3,5,3',5'-tetraiodothyronine (T4) and 3,5,3'-triiodothyronine (T3) to their inactive metabolites 3,3',5'-triiodothyronine (RT3 or reverse T3) and 3,3'-diiodothyronine (T2), respectively. Through its ability to inactivate thyroid hormones, DIO3 effects thermoregulation, gene expression and energy metabolism, as well as a number of other important reactions in cell maintenance and differentiation.

REFERENCES

1. Salvatore, D., et al. 1995. Type 3 Iodothyronine deiodinase: cloning, *in vitro* expression, and functional analysis of the placental selenoenzyme. J. Clin. Invest. 96: 2421-2430.
2. Hernandez, A., et al. 1998. Localization of the type 3 iodothyronine deiodinase (DIO3) gene to human chromosome 14q32 and mouse chromosome 12F1. Genomics 53: 119-121.
3. Huang, S.A., et al. 2000. Severe hypothyroidism caused by type 3 iodothyronine deiodinase in infantile hemangiomas. N. Engl. J. Med. 343: 185-189.
4. Online Mendelian Inheritance in Man, OMIM™. 2002. Johns Hopkins University, Baltimore, MD. MIM Number: 601038. World Wide Web URL: http://www.ncbi.nlm.nih.gov/omim/
5. Hernandez, A., et al. 2004. Complex organization and structure of sense and antisense transcripts expressed from the DIO3 gene imprinted locus. Genomics 83: 413-424.
6. Hernandez, A., et al. 2006. Type 3 deiodinase is critical for the maturation and function of the thyroid axis. J. Clin. Invest. 116: 476-484.
7. Köhrle, J. 2007. Thyroid hormone transporters in health and disease: advances in thyroid hormone deiodination. Best Pract. Res. Clin. Endocrinol. Metab. 21: 173-191.
8. Hernandez, A., et al. 2007. Gene expression from the imprinted DIO3 locus is associated with cell proliferation of cultured brown adipocytes. Endocrinology 148: 3968-3976.

CHROMOSOMAL LOCATION

Genetic locus: DIO3 (human) mapping to 14q32.31.

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.

PRODUCT

DIO3 siRNA (h) is a target-specific 19-25 nt siRNA 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 DIO3 shRNA Plasmid (h): sc-77150-SH and DIO3 shRNA (h) Lentiviral Particles: sc-77150-V as alternate gene silencing products.

For independent verification of DIO3 (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-77150A, sc-77150B and sc-77150C.

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

DIO3 siRNA (h) is recommended for the inhibition of DIO3 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 DIO3 gene expression knockdown using RT-PCR Primer: DIO3 (h)-PR: sc-77150-PR (20 µl, 540 bp). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.