SANTA CRUZ BIOTECHNOLOGY, INC.

betaKlotho siRNA (m): sc-72646

BACKGROUND

BetaKlotho is a 1,044 amino acid single-pass type III membrane protein that plays a key role in bile acid and cholesterol metabolism by suppressing transcription of CYP7A1 (cholesterol 7-α-hydroxylase), the rate-limiting enzyme in bile acid synthesis. Homozygous negative betaKlotho mice showed dramatically elevated bile acid synthesis and secretion, as well as a strong upregulation of CYP7A1 and CYP8B1 and resistance to gallstone formation. FGF19 and FGF21 require direct interaction with betaKlotho for activation, intracellular signaling and gene expression modulation. Both Klotho and betaKlotho consist of two internal repeats similar to family 1 glycosidases. BetaKlotho contains two glycosyl hydrolase 1 regions, however since these regions lack essential glutamic acid residues at specific and crucial locations, the domains appear to be inactive.

REFERENCES

1. Ito, S., et al. 2005. Impaired negative feedback suppression of bile acid synthesis in mice lacking betaKlotho. J. Clin. Invest. 115: 2202-2208.
2. Arrese, M., et al. 2006. BetaKlotho: a new kid on the bile acid biosynthesis block. Hepatology 43: 191-193.
3. Goetz, R., et al. 2007. Molecular insights into the klotho-dependent, endocrine mode of action of fibroblast growth factor 19 subfamily members. Mol. Cell. Biol. 27: 3417-3428.
4. Ogawa, Y., et al. 2007. BetaKlotho is required for metabolic activity of fibroblast growth factor 21. Proc. Natl. Acad. Sci. USA 104: 7432-7437.
5. Online Mendelian Inheritance in Man, OMIM™. 2007. Johns Hopkins University, Baltimore, MD. MIM Number: 611135. World Wide Web URL: http://www.ncbi.nlm.nih.gov/omim/
6. Wu, X., et al. 2008. C-terminal tail of FGF19 determines its specificity toward klotho co-receptors. J. Biol. Chem. 283: 33304-33309.
7. Yie, J., et al. 2009. FGF21 N- and C-termini play different roles in receptor interaction and activation. FEBS Lett. 583: 19-24.

CHROMOSOMAL LOCATION

Genetic locus: Klb (mouse) mapping to 5 C3.1.

PRODUCT

betaKlotho 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 betaKlotho shRNA Plasmid (m): sc-72646-SH and betaKlotho shRNA (m) Lentiviral Particles: sc-72646-V as alternate gene silencing products.

For independent verification of betaKlotho (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-72646A, sc-72646B and sc-72646C.

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

betaKlotho siRNA (m) is recommended for the inhibition of betaKlotho 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 betaKlotho gene expression knockdown using RT-PCR Primer: betaKlotho (m)-PR: sc-72646-PR (20 µl). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

SELECT PRODUCT CITATIONS

1. Yang, W., et al. 2017. N-3 polyunsaturated fatty acids increase hepatic fibroblast growth factor 21 sensitivity via a PPAR-γ-β-klotho pathway. Mol. Nutr. Food Res. E-published.

RESEARCH USE

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