SANTA CRUZ BIOTECHNOLOGY, INC.

Transketolase siRNA (m): sc-45592

BACKGROUND

Transketolase (TK or TKT), a member of the Transketolase family, is a multi-functional protein that plays a role in diabetes, cancer, Alzheimer's disease and Wernicke-Korsakoff's syndrome, a latent genetic neurological disorder. Transketolase is also important for the prevention of hyperglycemia-induced vascular damage. Transketolase is a crucial protein in the pentose phosphate pathway (PPP), where it catalyzes several reactions. In combination with Transaldolase, Transketolase functions as a link between glycolysis and the non-oxidative part of the PPP, allowing the cell to adapt to varying metabolic conditions in response to environmental changes. Transketolase activity is detected in small intestine epithelia, liver parenchyma, tongue, cornea and trachea. It is also expressed in the proximal tubules of kidney and in ganglion cells in medulla of the adrenal gland.

REFERENCES

1. Salamon, C., et al. 1998. The mouse transketolase (TKT) gene: cloning, characterization, and functional promoter analysis. Genomics 48: 209-220.
2. Kochetov, G.A., et al. 2001. Functional flexibility of the transketolase molecule. Biochemistry 66: 1077-1085.
3. Hammes, H.P., et al. 2003. Benfotiamine blocks three major pathways of hyperglycemic damage and prevents experimental diabetic retinopathy. Nat. Med. 9: 294-299.
4. Babaei-Jadidi, R., et al. 2004. High-dose thiamine therapy counters dyslipidaemia in streptozotocin-induced diabetic rats. Diabetologia 47: 2235-2246.
5. Esakova, O.A., et al. 2004. Donor substrate regulation of Transketolase. Eur. J. Biochem. 271: 4189-4194.
6. Stramer, B.M., et al. 2004. Uncoupling keratocyte loss of corneal crystallin from markers of fibrotic repair. Invest. Ophthalmol. Vis. Sci. 45: 4010-4015.
7. Esakova, O.A., et al. 2005. Effects of transketolase cofactors on its conformation and stability. Life Sci. 78: 8-13.
8. Fattal-Valevski, A., et al. 2005. Outbreak of life-threatening thiamine deficiency in infants in Israel caused by a defective soy-based formula. Pediatrics 115: e233-e238.

CHROMOSOMAL LOCATION

Genetic locus: Tkt (mouse) mapping to 14 B.

PRODUCT

Transketolase 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 Transketolase shRNA Plasmid (m): sc-45592-SH and Transketolase shRNA (m) Lentiviral Particles: sc-45592-V as alternate gene silencing products.

For independent verification of Transketolase (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-45592A, sc-45592B and sc-45592C.

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

Transketolase siRNA (m) is recommended for the inhibition of Transketolase 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.

GENE EXPRESSION MONITORING

Transketolase (H-7): sc-390179 is recommended as a control antibody for monitoring of Transketolase gene expression knockdown by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000) or immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500).

To ensure optimal results, the following support reagents are recommended: 1) Western Blotting: use m-IgGκ BP-HRP: sc-516102 or m-IgGκ BP-HRP (Cruz Marker): sc-516102-CM (dilution range: 1:1000-1:10000), Cruz Marker™ Molecular Weight Standards: sc-2035, UltraCruz® Blocking Reagent: sc-516214 and Western Blotting Luminol Reagent: sc-2048. 2) Immunofluorescence: use m-IgGκ BP-FITC: sc-516140 or m-IgGκ BP-PE: sc-516141 (dilution range: 1:50-1:200) with UltraCruz® Mounting Medium: sc-24941 or UltraCruz® Hard-set Mounting Medium: sc-359850.

RT-PCR REAGENTS

Semi-quantitative RT-PCR may be performed to monitor Transketolase gene expression knockdown using RT-PCR Primer: Transketolase (m)-PR: sc-45592-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.