

THTR2 (A-16): sc-162311

BACKGROUND

Humans lack biosynthesis pathways for the micronutrients thiamine and folate, however, regulation of these vitamins is necessary for normal cellular function. The SLC19A gene family products mediate membrane transport of these molecules across the membrane to meet cellular requirements; in particular, two transporter proteins differentially import and export thiamine. THTR2 (Thiamine transporter 2), also known as SLC19A3 (solute carrier family 19, member 3), is a 496 amino acid multi-pass membrane protein that is responsible for thiamine uptake in epithelial cells. THTR2 is widely expressed but most abundant in placenta, kidney and liver. Defects in THTR2 is thought to cause biotin-responsive basal ganglia disease (BBGD), a recessive disorder that presents as a subacute encephalopathy, with confusion, dysarthria, and dysphagia. BBGD progresses to severe rigidity, dystonia, quadriparesis and death if not treated.

REFERENCES

1. Rajgopal, A., et al. 2001. SLC19A3 encodes a second thiamine transporter ThTr2. *Biochim. Biophys. Acta* 1537: 175-178.
2. Liu, S., et al. 2004. Thiamine transporter gene expression and exogenous thiamine modulate the expression of genes involved in drug and prostaglandin metabolism in breast cancer cells. *Mol. Cancer Res.* 2: 477-487.
3. Zeng, W.Q., et al. 2005. Biotin-responsive basal ganglia disease maps to 2q36.3 and is due to mutations in SLC19A3. *Am. J. Hum. Genet.* 77: 16-26.
4. Nabokina, S.M., et al. 2005. Differentiation-dependent up-regulation of intestinal thiamin uptake: cellular and molecular mechanisms. *J. Biol. Chem.* 280: 32676-32682.
5. Vlasova, T.I., et al. 2005. Biotin deficiency reduces expression of SLC19A3, a potential biotin transporter, in leukocytes from human blood. *J. Nutr.* 135: 42-47.
6. Ashokkumar, B., et al. 2006. Thiamin uptake by the human-derived renal epithelial (HEK-293) cells: cellular and molecular mechanisms. *Am. J. Physiol. Renal Physiol.* 291: F796-F805.
7. Subramanian, V.S., et al. 2006. Biotin-responsive basal ganglia disease-linked mutations inhibit thiamine transport via hTHTR2: biotin is not a substrate for hTHTR2. *Am. J. Physiol., Cell Physiol.* 291: C851-C859.
8. Subramanian, V.S., et al. 2006. Targeting and trafficking of the human thiamine transporter-2 in epithelial cells. *J. Biol. Chem.* 281: 5233-5245.
9. Subramanian, V.S., et al. 2007. Vitamin B1 (thiamine) uptake by human retinal pigment epithelial (ARPE-19) cells: mechanism and regulation. *J. Physiol.* 582: 73-85.

CHROMOSOMAL LOCATION

Genetic locus: Slc19a3 (rat) mapping to 9q34.

SOURCE

THTR2 (A-16) is an affinity purified goat polyclonal antibody raised against a peptide mapping within an internal region of THTR2 of rat origin.

PRODUCT

Each vial contains 200 µg IgG in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

Blocking peptide available for competition studies, sc-162311 P, (100 µg peptide in 0.5 ml PBS containing < 0.1% sodium azide and 0.2% BSA).

APPLICATIONS

THTR2 (A-16) is recommended for detection of THTR2 of rat origin by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000), immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500) and solid phase ELISA (starting dilution 1:30, dilution range 1:30-1:3000); non cross-reactive with THTR1.

Molecular Weight of THTR2: 56 kDa.

RECOMMENDED SECONDARY REAGENTS

To ensure optimal results, the following support (secondary) reagents are recommended: 1) Western Blotting: use donkey anti-goat IgG-HRP: sc-2020 (dilution range: 1:2000-1:100,000) or Cruz Marker™ compatible donkey anti-goat IgG-HRP: sc-2033 (dilution range: 1:2000-1:5000), Cruz Marker™ Molecular Weight Standards: sc-2035, TBS Blotto A Blocking Reagent: sc-2333 and Western Blotting Luminol Reagent: sc-2048. 2) Immunofluorescence: use donkey anti-goat IgG-FITC: sc-2024 (dilution range: 1:100-1:400) or donkey anti-goat IgG-TR: sc-2783 (dilution range: 1:100-1:400) with UltraCruz™ Mounting Medium: sc-24941.

STORAGE

Store at 4° C, ****DO NOT FREEZE****. Stable for one year from the date of shipment. Non-hazardous. No MSDS required.

RESEARCH USE

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

PROTOCOLS

See our web site at www.scbt.com or our catalog for detailed protocols and support products.