SANTA CRUZ BIOTECHNOLOGY, INC.

3PGDH (h): 293 Lysate: sc-110989

BACKGROUND

The survival and development of central neurons require the supply of trophic factors by glial cells. The trophic actions of glial cells on Purkinje neurons are mediated by L-serine and glycine, which are glia-derived trophic factors synthesized by 3PGDH. 3PGDH protein is 544 amino acids in length. There are two distinct mRNA transcripts that encode for 3PGDH protein in normal human tissues: dominant 2.1 kb mRNA, which is highly expressed in prostate, testis, ovary, brain, liver, kidney and pancreas, and weakly expressed in thymus, colon, and heart; and 710 bp mRNA, which is highly expressed in heart and skeletal muscle. 3PGDH is regulated at the transcriptional level depending on tissue specificity and cellular proliferative status. 3PGDH protein is also highly expressed in adult and fetal brain tissues. 3PGDH protein plays an important role in the metabolism, development and function of the central nervous system. Its deficiency is a treatable congential error that impairs L-serine biosynthesis, characterized by congenital microcephaly, psychomotor retardation and seizures.

REFERENCES

1. de Koning, T.J., Duran, M., Dorland, L., Gooskens, R., Van Schaftingen, E., Jaeken, J., Blau, N., Berger, R. and Poll-The, B.T. 1998. Beneficial effects of L-serine and glycine in the management of seizures in 3-phosphoglycerate dehydrogenase deficiency. Ann. Neurol. 44: 261-265.
2. Shigeki, F., Toshihide, T., Junya, M., Keiko, Y., Miwako, Y., Asami, M., Toshifumi, Y., Masahiko, W., Masanobu, K. and Yoshio, H. 2000. L-serine and glycine serve as major astroglia-derived trophic factors for cerebellar Purkinje neurons. Proc. Natl. Acad. Sci. USA 97: 11528-11533.
3. Cho, H.M., Jun, D.Y., Bae, M.A., Ahn, J.D. and Kim, Y.H. 2000. Nucleotide sequence and differential expression of the human 3-phosphoglycerate dehydrogenase gene. Gene 245: 193-201.
4. Klomp, L.W., de Koning, T.J., Malingre, H.E., van Beurden, E.A., Brink, M., Opdam, F.L., Duran, M., Jaeken, J., Pineda, M., van Maldergem, L., Poll-The, B.T., van Den Berg, I.E. and Berger, R. 2000. Molecular characterization of 3-phosphoglycerate dehydrogenase deficiency—a neurometabolic disorder associated with reduced L-serine biosynthesis. Am. J. Hum. Genet. 67: 1389-1399.
5. Pineda, M., Vilaseca, M.A., Artuch, R., Santos, S., García González, M.M., Aracil, A., Van Schaftingen, E. and Jaeken, J. 2000. 3-phosphoglycerate dehydrogenase deficiency in a patient with West syndrome. Dev. Med. Child. Neurol. 42: 629-633.

CHROMOSOMAL LOCATION

Genetic locus: PHGDH (human) mapping to 1p12.

PRODUCT

3PGDH (h): 293 Lysate represents a lysate of human 3PGDH transfected 293 cells and is provided as 100 µg protein in 200 µl SDS-PAGE buffer.

STORAGE

Store at -20° C. Repeated freezing and thawing should be minimized. Sample vial should be boiled once prior to use. Non-hazardous. No MSDS required.

APPLICATIONS

3PGDH (h): 293 Lysate is suitable as a Western Blotting positive control for human reactive 3PGDH antibodies. Recommended use: 10-20 µl per lane.

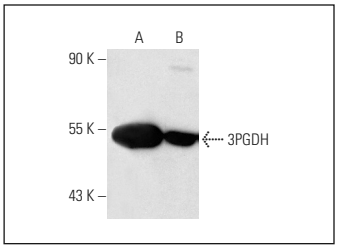
Control 293 Lysate: sc-110760 is available as a Western Blotting negative control lysate derived from non-tranfected 293 cells.

3PGDH (6B2): sc-100317. is recommended as a positive control antibody for Western Blot analysis of enhanced human 3PGDH expression in 3PGDH transfected 293 cells (starting dilution 1:100, dilution range 1:100-1:1,000).

RECOMMENDED SUPPORT REAGENTS

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.

DATA



3PGDH (6B2): sc-100317. Western blot analysis of 3PGDH expression in human 3PGDH transfected: sc-110989 (**A**) and non-transfected: sc-110760 (**B**) 293 whole cell lysates.

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.