

GAD-67 (h3): 293T Lysate: sc-158539

BACKGROUND

There are two forms of glutamic acid decarboxylases (GADs) that are found in the brain: GAD-65 (also known as GAD2) and GAD-67 (also known as GAD1, GAD or SCP). GAD-65 and GAD-67 are members of the group II decarboxylase family of proteins and are responsible for catalyzing the rate limiting step in the production of GABA (γ -aminobutyric acid) from L-glutamic acid.

Although both GADs are found in the brain, GAD-65 localizes to synaptic vesicle membranes in nerve terminals, while GAD-67 is distributed throughout the cell. GAD-67 is responsible for the basal levels of GABA synthesis. In the case of a heightened demand for GABA in neurotransmission, GAD-65 will transiently activate to assist in GABA production. The loss of GAD-65 is detrimental and can impair GABA neurotransmission, however the loss of GAD-67 is lethal. Due to alternative splicing, two isoforms exist for GAD-67: the predominant GAD-67 form and the minor GAD-25 form. GAD-25 is not expressed in brain but can be found in a variety of endocrine tissues.

REFERENCES

1. Chessler, S.D., Hampe, C.S., Orqvist, E., Simonson, W.T. and Bekris, L. 2002. Immune reactivity to GAD-25 in type 1 diabetes mellitus. *Autoimmunity* 35: 335-341.
2. Korpershoek, E., Verwest, A.M., Ijzendoorn, Y., Rottier, R., Drexhage, H.A. and de Krijger, R.R. 2007. Expression of GAD-67 and novel GAD-67 splice variants during human fetal pancreas development: GAD-67 expression in the fetal pancreas. *Endocr. Pathol.* 18: 31-36.
3. Kanter, I.C., Huttner, H.B., Staykov, D., Biermann, T., Struffert, T., Kerling, F., Hilz, M.J., Schellinger, P.D., Schwab, S. and Bardutzky, J. 2007. Cyclophosphamide for anti-GAD antibody-positive refractory status epilepticus. *Epilepsia* 49: 914-920.
4. Kanaani, J., Patterson, G., Schaufele, F., Lippincott-Schwartz, J. and Baekkeskov, S. 2008. A palmitoylation cycle dynamically regulates partitioning of the GABA-synthesizing enzyme GAD-65 between ER-Golgi and post-Golgi membranes. *J. Cell Sci.* 121: 437-449.
5. Hwang, I.K., Li, H., Yoo, K.Y., Choi, J.H., Lee, C.H., Chung, D.W., Kim, D.W., Seong, J.K., Yoon, Y.S., Lee, I.S. and Won, M.H. 2008. Comparison of glutamic acid decarboxylase 67 immunoreactive neurons in the hippocampal CA1 region at various age stages in dogs. *Neurosci. Lett.* 431: 251-255.
6. Hamilton, K.A., Parrish-Aungst, S., Margolis, F.L., Erdélyi, F., Szabó, G. and Puche, A.C. 2008. Sensory deafferentation transsynaptically alters neuronal GluR-1 expression in the external plexiform layer of the adult mouse main olfactory bulb. *Chem. Senses* 33: 201-210.
7. Ito, T., Hioki, H., Nakamura, K., Kaneko, T., Iino, S. and Nojyo, Y. 2008. Some γ -motoneurons contain γ -aminobutyric acid in the rat cervical spinal cord. *Brain Res.* 1201: 78-87.
8. Wei, J. and Wu, J.Y. 2008. Post-translational regulation of L-glutamic acid decarboxylase in the brain. *Neurochem. Res.* 33: 1459-1465.
9. Jain, R., Tartar, D.M., Gregg, R.K., Divekar, R.D., Bell, J.J., Lee, H.H., Yu, P., Ellis, J.S., Hoeman, C.M., Franklin, C.L. and Zaghoulani, H. 2008. Innocuous IFN- γ induced by adjuvant-free antigen restores normoglycemia in NOD mice through inhibition of IL-17 production. *J. Exp. Med.* 205: 207-218.

CHROMOSOMAL LOCATION

Genetic locus: GAD1 (human) mapping to 2q31.1.

PRODUCT

GAD-67 (h3): 293T Lysate represents a lysate of human GAD-67 transfected 293T cells and is provided as 100 μ g protein in 200 μ l SDS-PAGE buffer.

APPLICATIONS

GAD-67 (h3): 293T Lysate is suitable as a Western Blotting positive control for human reactive GAD-67 antibodies. Recommended use: 10-20 μ l per lane.

Control 293T Lysate: sc-117752 is available as a Western Blotting negative control lysate derived from non-transfected 293T cells.

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.

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.