SANTA CRUZ BIOTECHNOLOGY, INC.

GAD-65 (A-3): sc-377145

SANTA CRUZ BIOTECHNOLOGY

The Power to Question

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.

CHROMOSOMAL LOCATION

Genetic locus: GAD2 (human) mapping to 10p12.1; Gad2 (mouse) mapping to 2 A3.

SOURCE

GAD-65 (A-3) is a mouse monoclonal antibody raised against amino acids 1-95 of GAD-65 of human origin.

PRODUCT

Each vial contains 200 µg IgG_1 kappa light chain in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

GAD-65 (A-3) is available conjugated to agarose (sc-377145 AC), 500 µg/ 0.25 ml agarose in 1 ml, for IP; to HRP (sc-377145 HRP), 200 µg/ml, for WB, IHC(P) and ELISA; to either phycoerythrin (sc-377145 PE), fluorescein (sc-377145 FITC), Alexa Fluor® 488 (sc-377145 AF488), Alexa Fluor® 546 (sc-377145 AF546), Alexa Fluor® 594 (sc-377145 AF594) or Alexa Fluor® 647 (sc-377145 AF647), 200 µg/ml, for WB (RGB), IF, IHC(P) and FCM; and to either Alexa Fluor® 680 (sc-377145 AF680) or Alexa Fluor® 790 (sc-377145 AF790), 200 µg/ml, for Near-Infrared (NIR) WB, IF and FCM.

APPLICATIONS

GAD-65 (A-3) is recommended for detection of GAD-65 of mouse, rat and human origin by Western Blotting (starting dilution 1:100, dilution range 1:100-1:1000), immunoprecipitation [1-2 µg per 100-500 µg of total protein (1 ml of cell lysate)], immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500), immunohistochemistry (including paraffin-embedded sections) (starting dilution 1:50, dilution range 1:50-1:500) and solid phase ELISA (starting dilution 1:30, dilution range 1:30-1:3000).

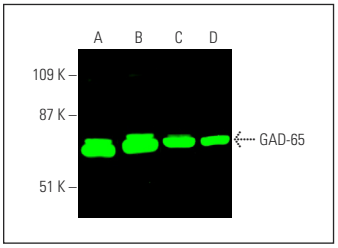
Suitable for use as control antibody for GAD-65 siRNA (h): sc-41964, GAD-65 siRNA (m): sc-41965, GAD-65 siRNA (r): sc-61888, GAD-65 shRNA Plasmid (h): sc-41964-SH, GAD-65 shRNA Plasmid (m): sc-41965-SH, GAD-65 shRNA Plasmid (r): sc-61888-SH, GAD-65 shRNA (h) Lentiviral Particles: sc-41964-V, GAD-65 shRNA (m) Lentiviral Particles: sc-41965-V and GAD-65 shRNA (r) Lentiviral Particles: sc-61888-V.

Molecular Weight of GAD-65: 65 kDa.

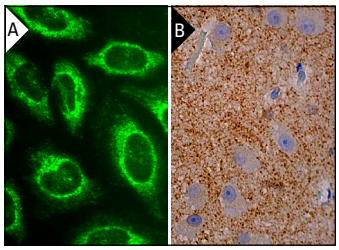
STORAGE

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

DATA



GAD-65 (A-3): sc-377145. Near-infrared western blot analysis of GAD-65 expression in rat cerebellum (**A**) and rat brain (**B**) tissue extracts and U-87 MG (**C**) and EOC 20 (**D**) whole cell lysates. Blocked with UltraCruz® Blocking Reagent: sc-516214. Detection reagent used: m-IgGκ BP-CFL 680: sc-516180.



GAD-65 (A-3): sc-377145. Immunofluorescence staining of methanol-fixed HeLa cells showing cytoplasmic localization (**A**). Immunoperoxidase staining of formalin fixed, paraffin-embedded human cerebral cortex tissue showing neuropil staining (**B**).

SELECT PRODUCT CITATIONS

1. Hernández-Cerón, M., et al. 2017. Participation of the dentate-rubral pathway in the kindling model of epilepsy. J. Neurosci. Res. 95: 1495-1502.
2. Lacaille, H., et al. 2019. Impaired interneuron development in a novel model of neonatal brain injury. eNeuro 6: ENEURO.0300-18.2019.
3. Frandsen, J., et al. 2020. Neural glyoxalase pathway enhancement by morin derivatives in an Alzheimer's disease model. ACS Chem. Neurosci. 11: 356-366.
4. Branscome, H., et al. 2022. Retroviral infection of human neurospheres and use of stem cell EVs to repair cellular damage. Sci. Rep. 12: 2019.
5. Frandsen, J., et al. 2022. Effect of cannabidiol on the neural glyoxalase pathway function and longevity of several *C. elegans* strains including a *C. elegans* Alzheimer's disease model. ACS Chem. Neurosci. 13: 1165-1177.
6. Singh, S., et al. 2022. Somatostatin-mediated regulation of retinoic acid-induced differentiation of SH-SY5Y cells: neurotransmitters phenotype characterization. Biomedicines 10: 337.
7. Tadokoro, T., et al. 2022. Precision spinal gene delivery-induced functional switch in nociceptive neurons reverses neuropathic pain. Mol. Ther. 30: 2722-2745.
8. Liang, D., et al. 2024. A GABAergic system in atrioventricular node pacemaker cells controls electrical conduction between the atria and ventricles. Cell Res. 34: 556-571.
9. Hayes, S.H., et al. 2024. Neurophysiological, structural, and molecular alterations in the prefrontal and auditory cortices following noise-induced hearing loss. Neurobiol. Dis. 200: 106619.

RESEARCH USE

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