SANTA CRUZ BIOTECHNOLOGY, INC.

p-GluR-1 (Ser 831): sc-135698

SANTA CRUZ BIOTECHNOLOGY

The Power to Question

BACKGROUND

Glutamate receptors mediate most excitatory neurotransmission in the brain and play an important role in neural plasticity, neural development and neurodegeneration. Ionotropic glutamate receptors are categorized into NMDA receptors and kainate/AMPA receptors, both of which contain glutamate-gated, cation-specific ion channels. Kainate/AMPA receptors are co-localized with NMDA receptors in many synapses and consist of seven structurally related subunits designated GluR-1 to -7. The kainate/AMPA receptors are primarily responsible for the fast excitatory neuro-transmission by glutamate, whereas the NMDA receptors are functionally characterized by a slow kinetic and a high permeability for Ca^{2+} ions. The NMDA receptors consist of five subunits: four ε subunits (ε 1, 2, 3 and 4) and one ζ subunit. The ζ subunit is expressed throughout the brainstem whereas the four ε subunits display limited distribution. Serine 831 is specifically phosphorylated by CaM kinase II and is the major site of CaM kinase II phosphorylation on GluR-1. In addition, treatment of hippocampal slice preparations with phorbol esters and forskolin increase the phosphorylation of Serine 831 and 845, respectively, indicating that protein kinase C and protein kinase A phosphorylate these residues in hippocampal slices. GluR-1 phosphorylation is critical for synaptic plasticity, and that identical stimulation conditions recruit different signal-transduction pathways depending on synaptic history.

REFERENCES

1. Choi, D.W., et al. 1990. The role of glutamate neurotoxicity in hypoxic-ischemic neuronal death. Annu. Rev. Neurosci. 13: 171-182.
2. Nakanishi, S. 1992. Molecular diversity of glutamate receptors and implications for brain function. Science 258: 597-603.
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4. Bliss, T.V., et al.1993. A synaptic model of memory: long-term potentiation in the hippocampus. Nature 361: 31-39.
5. Watanabe, M., et al. 1994. Distinct distributions of five NMDA receptor channel subunit mRNAs in the brainsteam. J. Comp. Neurol. 343: 520-531.
6. Hollmann, M., et al. 1994. Cloned glutamate receptors. Ann. Rev. Neurosci. 17: 31-108.
7. Mammen, A.L., et al. 1997. Phosphorylation of the α-amino-3-hydroxy-5-methylisoxazole4-propionic acid receptor GluR-1 subunit by calcium/calmodulin-dependent kinase II. J. Biol. Chem. 272: 32528-32533.

CHROMOSOMAL LOCATION

Genetic locus: GRIA1 (human) mapping to 5q33.2; Gria1 (mouse) mapping to 11 B1.3.

SOURCE

p-GluR-1 (Ser 831) is a rabbit polyclonal antibody raised against a short amino acid sequence containing Ser 831 phosphorylated GluR-1 of rat origin.

PRODUCT

Each vial contains 150 µl of IgG in 10 mM HEPES with 150 mM NaCl, 50% glycerol and < 0.1% BSA.

APPLICATIONS

p-GluR-1 (Ser 831) is recommended for detection of Ser 831 phosphorylated GluR-1 of mouse, rat, human and canine origin by Western Blotting (starting dilution to be determined by researcher, dilution range 1:100-1:5000) and immunoprecipitation [1-2 µl per 100-500 µg of total protein (1 ml of cell lysate)].

Suitable for use as control antibody for GluR-1 siRNA (h): sc-35485, GluR-1 siRNA (m): sc-35486, GluR-1 shRNA Plasmid (h): sc-35485-SH, GluR-1 shRNA Plasmid (m): sc-35486-SH, GluR-1 shRNA (h) Lentiviral Particles: sc-35485-V and GluR-1 shRNA (m) Lentiviral Particles: sc-35486-V.

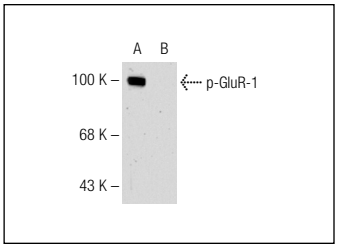
Molecular Weight of p-GluR-1: 106 kDa.

Positive Controls: mouse brain extract: sc-2253, mouse cerebellum extract: sc-2403 or rat brain extract: sc-2392.

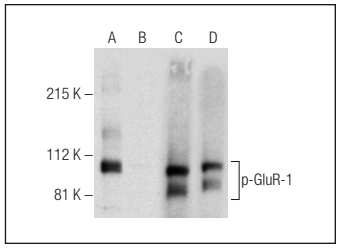
RECOMMENDED SECONDARY REAGENTS

To ensure optimal results, the following support (secondary) reagents are recommended: 1) Western blotting: use goat anti-rabbit IgG-HRP: sc-2004 (dilution range: 1:2000-1:100,000) or Cruz Marker™ compatible goat anti-rabbit IgG-HRP: sc-2030 (dilution range: 1:2000-1:5000), Cruz Marker™ Molecular Weight Standards: sc-2035, TBS Blotto B Blocking Reagent: sc-2335 (use 50 mM NaF, sc-24988, as diluent), Western Blotting Luminol Reagent: sc-2048 and Lambda Phosphatase: sc-200312A. 2) Immunoprecipitation: use Protein A/G PLUS-Agarose: sc-2003 (0.5 ml agarose/2.0 ml).

DATA



p-GluR-1 (Ser 831): sc-135698. Western blot analysis of GluR-1 phosphorylation in untreated (**A**) and lambda protein phosphatase (sc-200312A) treated (**B**) rat hippocampal tissue extracts.



Western blot analysis of GluR-1 phosphorylation in untreated (**A**,**C**) and lambda protein phosphatase (sc-200312A) treated (**B**,**D**) rat brain tissue extracts. Antibodies tested include p-GluR-1 (Ser 831): sc-135698 (**A**,**B**) and GluR-1 (G-12): sc-55509 (**C**,**D**).

STORAGE

For immediate and continuous use, store at 4° C for up to one month. For sporadic use, freeze in working aliquots in order to avoid repeated freeze/thaw cycles. If turbidity is evident upon prolonged storage, clarify solution by centrifugation.

RESEARCH USE

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