

p-Synapsin Ia/b (Ser 62/Ser 67): sc-135709

BACKGROUND

Synapsin I, which exists as two alternatively spliced isoforms designated Synapsin Ia and Synapsin Ib, has been characterized as one of the major phosphoproteins in nerve terminals and is thought to be involved in the regulation of neurotransmitter release. Synapsin I cross-links synaptic vesicles and the cytoskeleton, and the interactions of synapsins with Actin filaments and synaptic vesicles are regulated by phosphorylation by calmodulin-dependent protein kinase II and cAMP-dependent protein kinase. Posttranslational modifications of Synapsin I result in phosphorylation of the protein at different sites and by different kinases. The Ser 553 residue of Synapsin I is phosphorylated *in vivo*. This phosphorylation site is immediately followed by a proline, suggesting that Synapsin I is an *in vivo* substrate of the proline-directed protein kinase, Cdk5.

REFERENCES

1. Sudhof, T.C., et al. 1989. Synapsins: mosaics of shared and individual domains in a family of synaptic vesicle phosphoproteins. *Science* 245: 1474-1480.
2. Sudhof, T.C. 1990. The structure of the human synapsin I gene and protein. *J. Biol. Chem.* 265: 7849-7852.
3. Melloni, R.H., Jr. and DeGennaro, L.J. 1994. Temporal onset of synapsin I gene expression coincides with neuronal differentiation during the development of the nervous system. *J. Comp. Neurol.* 342: 449-462.
4. Nicol, S., et al. 1997. Ca²⁺-dependent interaction with calmodulin is conserved in the synapsin family: identification of a high-affinity site. *Biochemistry* 36: 11487-11495.
5. Hosaka, M. and Sudhof, T.C. 1998. Synapsins I and II are ATP-binding proteins with differential Ca²⁺ regulation. *J. Biol. Chem.* 273: 1425-1429.
6. Hosaka, M. and Sudhof, T.C. 1998. Synapsin III, a novel synapsin with an unusual regulation by Ca²⁺. *J. Biol. Chem.* 273: 13371-13374.

CHROMOSOMAL LOCATION

Genetic locus: Syn1 (mouse) mapping to X A1.3.

SOURCE

p-Synapsin Ia/b (Ser 62/Ser 67) is a rabbit polyclonal antibody raised against a short amino acid sequence containing dually Ser 62 and Ser 67 phosphorylated Synapsin Ia/b of rat origin.

PRODUCT

Each vial contains IgG in 100 µl of 10 mM HEPES with 150 mM NaCl, 50% glycerol and < 0.1% BSA.

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.

APPLICATIONS

p-Synapsin Ia/b (Ser 62/Ser 67) is recommended for detection of Ser 62 and Ser 67 dually phosphorylated Synapsin Ia/b of mouse, rat and bovine 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 Synapsin Ia/b siRNA (m): sc-37013, Synapsin Ia/b shRNA Plasmid (m): sc-37013-SH and Synapsin Ia/b shRNA (m) Lentiviral Particles: sc-37013-V.

Molecular Weight of p-Synapsin Ia: 80 kDa.

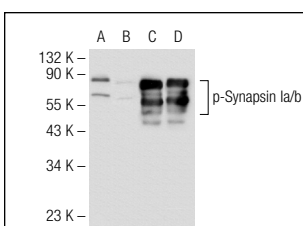
Molecular Weight of p-Synapsin Ib: 86 kDa.

Positive Controls: rat brain extract: sc-2392, rat cerebellum extract: sc-2398 or mouse brain extract: sc-2253.

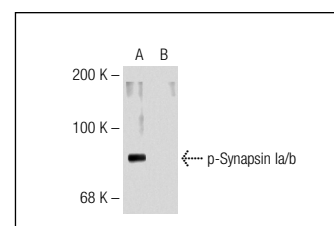
RECOMMENDED SECONDARY REAGENTS

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



Western blot analysis of Synapsin Ia/b phosphorylation in untreated (A, C) and lambda protein phosphatase (sc-200312A) treated (B, D) rat brain tissue extracts. Antibodies tested include p-Synapsin Ia/b (Ser 62/Ser 67): sc-135709 (A, B) and Synapsin Ia/b (H-170): sc-20780 (C, D).



p-Synapsin Ia/b (Ser 62/Ser 67): sc-135709. Western blot analysis of Synapsin Ia/b phosphorylation in rat prefrontal cortex tissue extract. Blots were probed with p-Synapsin Ia/b (Ser 62/Ser 67): sc-135709 (A) and p-Synapsin Ia/b (Ser 62/Ser 67): sc-135709 preincubated with its cognate phosphorylated peptide (B).

SELECT PRODUCT CITATIONS

1. Zhu, W.L., et al. 2011. Hippocampal CA3 calcineurin activity participates in depressive-like behavior in rats. *J. Neurochem.* 117: 1075-1086.
2. Stansfield, K.H., et al. 2012. Dysregulation of BDNF-TrkB signaling in developing hippocampal neurons by Pb²⁺: implications for an environmental basis of neurodevelopmental disorders. *Toxicol. Sci.* 127: 277-295.

RESEARCH USE

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