



PhosphoSolutions®
Antibodies that work™

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Anti-GABA_A Receptor, α₂-Subunit

Catalog Number: 840-GA2

Size: 50 μl

Product Description: Rabbit polyclonal antibody

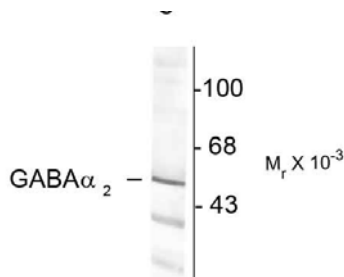
Applications: WB: 1:1000

Antigen: Peptide representing a sequence that is specific for the α₂-subunit of rat GABA_A receptor. The sequence of the immunogen has no homology with any other GABA_A R-subunit.

Species reactivity: The antibody has been directly tested for reactivity in rat tissue. It is anticipated that the antibody will also work with bovine, canine, human, mouse and non-human primate tissues based on the fact that these species have 100% homology with the amino acid sequence used as antigen.

Biological Significance: *Gamma*-aminobutyric acid (GABA) is the primary inhibitory neurotransmitter in the central nervous system, causing a hyperpolarization of the membrane through the opening of a Cl⁻ channel associated with the GABA_A Receptor (GABA_A-R) subtype. GABA_A-Rs are important therapeutic targets for a range of sedative, anxiolytic, and hypnotic agents and are implicated in several diseases including epilepsy, anxiety, depression, and substance abuse. The GABA_A-R is a multimeric subunit complex. To date six αs, four βs and four γs, plus alternative splicing variants of some of these subunits, have been identified (Olsen and Tobin, 1990; Whiting et al., 1999; Ogris et al., 2004). Injection in oocytes or mammalian cell lines of cRNA coding for α- and β-subunits results in the expression of functional GABA_A-Rs sensitive to GABA. However, co-expression of a γ-subunit is required for benzodiazepine modulation. The various effects of the benzodiazepines in brain may also be mediated via different α-subunits of the receptor (McKernan et al., 2000; Mehta and Ticku, 1998; Ogris et al., 2004; Pörtl et al., 2003). Lastly, phosphorylation of β-subunits of the receptor has been shown to modulate GABA_A-R function (Brandon et al., 2003).

Anti-GABA_A Receptor, α₂-Subunit



Western blot of 10 μg of rat cortex lysate showing immunolabeling of the ~53k α₂-subunit of the GABA_A-R.

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WB = Western Blot **IF** = Immunofluorescence **IHC** = Immunohistochemistry **IP** = Immunoprecipitation

Packaging: 50 μl neat serum. Adequate material to conduct 10 mini-Western blots.

Storage and Stability: For long term storage -20°C is recommended.

Shipment: Domestic - Blue Ice; International - Blue Ice or Dry Ice.

Purification Method: Unpurified neat serum.

Antibody Specificity: Specific for the ~53k α_2 -subunit of the GABA_A receptor in Western blots of rat brain extracts.

Quality Control Tests: Western blots performed on each lot.

References:

- Brandon NJ, Jovanovic JN, Colledge M, Kittler JT, Brandon JM, Scott JD, Moss SJ (2003) A kinase anchoring protein 79/150 facilitates the phosphorylation of GABA_A receptors by cAMP-dependent protein kinase via selective interaction with receptor β -subunits. *Mol Cell Neurosci* 22:87-97.
- McKernan RM, et al. (2000) Sedative but not anxiolytic properties of benzodiazepines are mediated by the GABA_A receptor α_1 -subtype. *Nature Neurosci* 3:587-592.
- Mehta AK, Ticku MK (1998) Prevalence of the GABA_A receptor assemblies containing α_1 -subunit in the rat cerebellum and cerebral cortex as determined by immunoprecipitation: Lack of modulation by chronic ethanol administration. *Mol Brain Res* 67:194-199.
- Ogris W, Pörtl A, Hauer B, Ernst M, Oberto A, Wulff P, Höger H, Wisden W, Sieghart W (2004) Affinity of various benzodiazepine site ligands in mice with a point mutation in the GABA_A receptor γ_2 -subunit. *Biochem Pharmacol* 68:1621-1629.
- Olsen RW, Tobin AJ (1990) Molecular biology of GABA_A receptors. *FASEB* 4:1469-1480.
- Pörtl A, Hauer B, Fuchs K, Tretter V, Sieghart W (2003) Subunit composition and quantitative importance of GABA_A receptor subtypes in the cerebellum of mouse and rat. *J Neurochem* 87:1444-1455.
- Whiting PJ, Bonnert TP, McKernan RM, Farrar S, Le Bourdellès B, Heavens RP, Smith DW, Hewson L, Rigby MR, Sirinathsinghji DJS, Thompson SA, Wafford KA (1999) Molecular and functional diversity of the expanding GABA_A receptor gene family. *Ann NY Acad Sci* 868:645-653.

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