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# Product Information

**ANTI-GABA$_A$ Receptor (α1 subunit)**
produced in rabbit, affinity isolated antibody

Catalog Number **G4416**

## Product Description

Anti-GABA$_A$ Receptor (α1 subunit) (γ-Aminobutyric acid Receptor type A α1 subunit, GABRA1) is produced in rabbit using as immunogen a highly purified peptide QPSQDELKDNTTVFTR(C), corresponding to amino acids 28-43 of rat GABA$_A$ receptor α1 subunit with an additional C-terminal cysteine. The epitope is specific for the GABA$_A$ receptor α1 subunit and shares little homology with α5 and α2 subunits (9/16 and 8/16 residues identical, respectively) and no homology with any other known protein. The epitope is identical in mouse and rat and highly conserved in human, bovine (15/16 residues identical) and chicken (14/16 residues identical) antigens. The antibody was affinity isolated on immobilized immunogen.

Anti-GABA$_A$ Receptor (α1 subunit) specifically recognizes the GABA$_A$ receptor α1 subunit protein and may be used for the detection of this protein (~50 kDa) in rat brain membrane extracts by immunoblotting and immunohistochemistry.

The inhibitory neurotransmitter GABA (γ-aminobutyric acid) signals through two distinct types of pre- and post-synaptic receptors, GABA$_A$ and GABA$_B$. Both GABA receptors can mediate depression of synaptic transmission and contribute to the inhibition controlling neuronal excitability.[1] The receptors differ with regard to their ionic characteristics and pharmacological properties. The GABA$_A$ receptor is an ionotropic receptor that forms the GABA gated chloride channel and consists of several heterogeneous subunits with membrane recognition sites for benzodiazapenes.[2] Over the past decade, a family of GABA$_A$ receptor subtypes has been delineated. These subtypes are generated by the co-assembly of five polypeptides selected from the α1-α6, β1-β3, γ1-γ3, δ, ε, π and θ subunits.[3]

The gene transcripts and the polypeptides have distinct patterns of spatial expression such that the GABA$_A$ receptor subtypes have defined localizations that are presumed to reflect their physiological function. For example, serotonergic and GABAergic neurons selectively express distinct patterns of α subunits, suggesting they possess distinct GABA$_A$ receptor subtypes.[4] Serotonergic neurons express strong α3 immunoreactivity but show no α1 immunoreactivity. In contrast, GABAergic neurons express both α1 and α3 subunits.

GABA$_A$ receptor subtypes also vary with respect to developmental expression patterns.[5] Developmental changes in the receptor subunit composition and the resulting pharmacology will be important in understanding the type of GABA-mediated transmission that takes place between neuronal contacts in the neonatal and, ultimately, the mature brain.

## Reagent

Supplied as a lyophilized powder from phosphate buffered saline, pH 7.4, containing 1% bovine serum albumin, and 0.05% sodium azide.

## Precautions and Disclaimer

This product is for R&D use only, not for drug, household, or other uses. Please consult the Material Safety Data Sheet for information regarding hazards and safe handling practices.

## Preparation Instructions

Reconstitute the 0.05 mL vial with 50 µL deionized water. Reconstitute the 0.2 mL vial with 200 µL deionized water. After reconstitution, the antibody concentration is ~0.8 mg/mL. Further dilutions should be made using 1% bovine serum albumin.

## Storage/Stability

Lyophilized powder can be stored intact at room temperature for several weeks. For extended storage, it should be stored at –20 °C or below. Once reconstituted, freeze in working aliquots. Repeated freezing and thawing, or storage in “frost-free” freezers, is not recommended. If slight turbidity occurs upon prolonged storage, clarify the solution by centrifugation before use. Working dilutions should be discarded if not used within 12 hours.

**Product Profile**

Immunoblotting: a working dilution of 1:400 to 1:1000 is recommended using rat brain membranes using peroxidase conjugated-goat anti-rabbit IgG and detection by chemiluminescence.

Immunohistochemistry: a procedure for immunohistochemistry has been described for an antibody against the identical epitope.[4]

**Note:** In order to obtain the best results using various techniques and preparations, we recommend determining the optimal working dilutions by titration.

**References**


1. Kerr, D.I., and Ong, J., *Pharmacol. Ther.*, **67**, 187-246 (1995).
2. Kostowski, W., *Pol. J. Pharmacol.*, **47**, 237-246 (1995).
3. Whiting, P.J., et al., *Ann. N.Y. Acad. Sci.*, **868**, 645-653 (1999).
4. Gao, B., et al., *Neuroscience*, **54**, 881-892 (1993).
5. Carlson, B.X., et al., *Eur. J. Pharmacol.*, **352**, 1-14 (1998).


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