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Product Information

Anti-$GABA_A$ Receptor (α3 subunit)
produced in rabbit, affinity isolated antibody

Catalog Number **G4291**

Product Description

Anti-$GABA_A$ Receptor (α3 subunit (γ-Aminobutyric acid receptor type A α3 subunit, GABRA3) is produced in rabbit using as immunogen a highly purified peptide QGESR RQEPG DFVKQ (C), corresponding to amino acid residues 1-15 of human $GABA_A$ receptor α3 subunit (residues 29-43 of the precursor) with an additional C-terminal cysteine. The epitope is specific for the $GABA_A$ α3 subunit and shares no homology with any other known protein. The epitope is identical in the mouse and rat antigens and highly conserved in the bovine antigen, 14/15 residues identical. The antibody was affinity isolated on immobilized immunogen.

Anti-$GABA_A$ Receptor (α3 subunit) specifically recognizes the $GABA_A$ receptor α3 subunit protein and may be used for the detection of the $GABA_A$ receptor α3 subunit protein (58-60 kDa) in rat brain membrane extracts by immunoblotting and in rat brain frozen sections by immunohistochemistry.

The inhibitory neurotransmitter GABA signals through two distinct types of pre- and postsynaptic receptors, $GABA_A$ and $GABA_B$. Both GABA receptors can mediate depression of synaptic transmission and contribute to the inhibition controlling neuronal excitability.[1] $GABA_A$ and $GABA_B$ 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 locations 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 $GABA_A$ 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 lyophilized at a concentration of 0.3 mg/ml in phosphate buffered saline, pH 7.4, with 1% bovine serum albumin, 5% sucrose and 0.025% 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 lyophilized vial with 0.05 ml or 0.2 ml deionized water, depending on the package size purchased. Antibody dilutions should be made in buffer containing 1-3% 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 dilution samples should be discarded if not used within 12 hours.

Product Profile

Immunoblotting: a recommended working antibody dilution of 1:200 is determined using rat brain membranes.

Immunohistochemistry: a recommended working antibody dilution of 1:200 is determined using rat brain frozen sections.

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

Note: In order to obtain best results and assay sensitivities of different techniques and preparations, we recommend determining optimal working dilutions by titration test.

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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