3050 Spruce Street
Saint Louis, Missouri 63103 USA
Telephone 800-325-5832 • (314) 771-5765
Fax (314) 286-7828
email: techserv@sial.com
sigma-aldrich.com

ProductInformation

Anti-$GABA_A$ Receptor (βı subunit), Cytosolic Loop
Developed in Rabbit, Affinity Isolated Antibody

Product Number **G 9419**

Product Description

Anti-$GABA_A$ Receptor (β1 subunit), cytosolic loop, is developed in rabbit using a fusion protein with the amino acid sequence representing the cytosolic loop of the rat $GABA_A$ receptor (β1 subunit) as immunogen. The antiserum is purified on an affinity column containing the antigen fusion protein.

The antibody specifically detects $GABA_A$ receptor β1 subunit (protein with apparent molecular mass of 51-54 kDa) in rat brain membrane fractions. It has been used in immunoblotting and immunoprecipitation applications.

The inhibitory neurotransmitter GABA (γ-aminobutyric acid) 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. $GABA_A$ 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 benzodiazepines. 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.

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 β subunits, suggesting they possess distinct $GABA_A$ receptor subtypes. 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. 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

The antibody is supplied in 10 mM HEPES, pH 7.5, 150 mM NaCl, 100 ug/ml BSA, and 50% glycerol.

Storage/Stability

Store at –20 °C. Due to the presence of 50% glycerol the antibody will remain in solution. For extended storage, centrifuge the vial briefly before opening and prepare working aliquots. The antibody is stable for at least 24 months when stored at -20°C. Defrosted aliquots in use should be stored at 4 °C. Avoid repeated freezing and thawing.

Product Profile

A recommended working dilution of 1:1000 is determined by immunoblotting in rat brain membrane fractions. For immunoprecipitation use 20 µg antibody for 150 µL dodecylsulfate extracts of rat forebrains.

Note: In order to obtain best results in different techniques and preparations we recommend determining optimal working concentration by a titration test.

References

1. Zezula, J., et al., Separation of α_1, α_2 and α_3 subunits of the $GABA_A$-benzodiazepine receptor complex by immunoaffinity chromatography. Brain Res., **563,** 325-328 (1991).
2. Bencsits, E., et al., A significant part of native γ-aminobutyric $acid_A$ receptors containing α_4 subunits do not contain γ or δ subunits. J. Biol. Chem., **274,** 19613-19616. (1999)
3. Nusser, Z., et al., Alterations in the expression of $GABA_A$ receptor subunits in cerebellar granule cells after the disruption of the α_6 subunit gene. Eur. J. Neurosci., **11**, 1685-1697 (1999).

AH/PHC 07/04