SANTA CRUZ BIOTECHNOLOGY, INC.

$GABA_A$ Rα4 (N-19): sc-7355

SANTA CRUZ BIOTECHNOLOGY
The Power to Question

BACKGROUND

GAD-65 and GAD-67, glutamate decarboxylases function to catalyze the production of GABA (γ-aminobutyric acid). In the central nervous system GABA functions as the main inhibitory transmitter by increasing a Cl-conductance that inhibits neuronal firing. GABA has been shown to activate both ionotropic ($GABA_A$) and metabotropic ($GABA_B$) receptors as well as a third class of receptors called $GABA_C$. Both $GABA_A$ and $GABA_C$ are ligand-gated ion channels, however, they are structurally and functionally distinct. Members of the $GABA_A$ receptor family include $GABA_A$ Rα1-6, $GABA_A$ R β1-3, $GABA_A$ Rγ1-3, $GABA_A$ Rδ, $GABA_A$ Rε, $GABA_A$ Rρ1 and $GABA_A$ Rρ2. The $GABA_B$ family is composed of $GABA_B$ R1α and $GABA_B$ R1β. GABA transporters have also been identified and include GABA T-1, GABA T-2 and GABA T-3 (also designated GAT-1, -2, and -3). The GABA transporters function to terminate GABA action.

REFERENCES

1. Nelson, H., et al. 1990. Cloning of the human brain GABA transporter. FEBS Lett. 269: 181-184.
2. Cherubini, E., et al. 1991. GABA: an excitatory transmitter in early postnatal life. Trends Neurosci. 14: 515-519.
3. Borden, L.A., et al. 1992. Molecular heterogeneity of the γ-aminobutyric acid (GABA) transport system. Cloning of two novel high affinity GABA transporters from rat brain. J. Biol. Chem. 267: 21098-21104.
4. Dirkx, R., Jr., et al. 1995. Targeting of the 67-kDa isoform of glutamic acid decarboxylase to intracellular organelles is mediated by its interaction with the NH_2-terminal region of the 65-kDa isoform of glutamic acid decarboxylase. J. Biol. Chem. 270: 2241-2246.
5. Lukasiewicz, P.D. 1996. $GABA_C$ receptors in the vertebrate retina. Mol. Neurobiol. 12: 181-194.
6. Kaupmann, K., et al. 1997. Expression cloning of $GABA_B$ receptors uncovers similarity to metabotropic glutamate receptors. Nature 386: 239-246.

CHROMOSOMAL LOCATION

Genetic locus: GABRA4 (human) mapping to 4q12; Gabra4 (mouse) mapping to 5 C3.2.

SOURCE

$GABA_A$ Rα4 (N-19) is an affinity purified goat polyclonal antibody raised against a peptide mapping at the N-terminus of $GABA_A$ Rα4 of human origin.

PRODUCT

Each vial contains 100 µg IgG in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

Blocking peptide available for competition studies, sc-7355 P, (100 µg peptide in 0.5 ml PBS containing < 0.1% sodium azide and 0.2% BSA).

STORAGE

Store at 4° C, **DO NOT FREEZE**. Stable for one year from the date of shipment. Non-hazardous. No MSDS required.

APPLICATIONS

$GABA_A$ Rα4 (N-19) is recommended for detection of $GABA_A$ Rα4 of mouse, rat and human origin by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000), immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500) and solid phase ELISA (starting dilution 1:30, dilution range 1:30-1:3000).

$GABA_A$ Rα4 (N-19) is also recommended for detection of $GABA_A$ Rα4 in additional species, including equine, bovine and porcine.

Suitable for use as control antibody for $GABA_A$ Rα4 siRNA (h): sc-35433, $GABA_A$ Rα4 siRNA (m): sc-35434, $GABA_A$ Rα4 shRNA Plasmid (h): sc-35433-SH, $GABA_A$ Rα4 shRNA Plasmid (m): sc-35434-SH, $GABA_A$ Rα4 shRNA (h) Lentiviral Particles: sc-35433-V and $GABA_A$ Rα4 shRNA (m) Lentiviral Particles: sc-35434-V.

Molecular Weight of $GABA_A$ Rα4: 66-67 kDa.

Positive Controls: H4 cell lysate: sc-2408.

SELECT PRODUCT CITATIONS

1. Sanna, E., et al. 2003. Changes in $GABA_A$ receptor gene expression associated with selective alterations in receptor function and pharmacology after ethanol withdrawal. J. Neurosci. 23: 11711-11724.
2. Griffiths, J., et al. 2005. Withdrawal from progesterone increases expression of α4, β1, and δ $GABA_A$ receptor subunits in neurons in the periaqueductal gray matter in female Wistar rats. J. Comp. Neurol. 486: 89-97.
3. Lovick, T.A., et al. 2005. Changes in $GABA_A$ receptor subunit expression in the midbrain during the oestrous cycle in Wistar rats. Neuroscience 131: 397-405.
4. Griffiths, J.L., et al. 2005. GABAergic neurones in the rat periaqueductal grey matter express α4, β1 and δ $GABA_A$ receptor subunits: plasticity of expression during the estrous cycle. Neuroscience 136: 457-466.
5. Shen, H., et al. 2007. Reversal of neurosteroid effects at α4β2δ $GABA_A$ receptors triggers anxiety at puberty. Nat. Neurosci. 10: 469-477.
6. Mathers, D.A., et al. 2009. Effects of the β-amino acid antagonist TAG on thalamocortical inhibition. Neuropharmacology 56: 1097-1105.

RESEARCH USE

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

PROTOCOLS

See our web site at www.scbt.com or our catalog for detailed protocols and support products.