

Product Information

Anti-Vesicular GABA Transporter (VGAT)

Developed in Rabbit, Affinity Isolated Antibody

Product Number **V5764**

Product Description

Anti-Vesicular GABA transporter (VGAT) is developed in rabbit using a synthetic peptide corresponding to amino acids 1-20 located at the N-terminus of mouse VGAT conjugated to KLH as immunogen. This sequence is identical in rat VGAT and highly conserved (single amino acid substitution) in human VGAT. Anti-VGAT is affinity-purified using the immunizing peptide immobilized on agarose.

Anti-VGAT specifically recognizes VGAT (may be observed as a doublet 52–57 kDa or a broad band at ~55 kDa). Applications include immunoblotting and immunofluorescence. Staining of the VGAT band in immunoblotting is specifically inhibited with the VGAT immunizing peptide (mouse, amino acids 1-20).

Synaptic transmission involves the regulated exocytosis of vesicles containing neurotransmitters. The inhibitory neurotransmitter γ -aminobutyric acid (GABA) is synthesized in the cytoplasm from L-glutamate by the enzyme glutamic acid decarboxylase (GAD) and loaded in synaptic vesicles for exocytosis. The vesicular GABA transporter (VGAT, also termed vesicular inhibitory amino acid transporter or VIAAT, 52–57 kDa) is responsible for the uptake of GABA into synaptic vesicles, following synthesis by GAD, or reuptake by plasma membrane GABA transporters (GATs).¹⁻²

VGAT protein (55 kDa) contains ten transmembrane domains and belongs to a new family of vesicular neurotransmitter transporters. VGAT is highly conserved in mouse, rat, and human (95–98% identity).^{1,3} VGAT uses both chemical and electrical components of the luminal protein gradient to mediate the accumulation of GABA into synaptic vesicles. VGAT is also responsible for glycine uptake in glycinergic neurons.

VGAT is a homolog of the *C. elegans* unc-47 protein involved in GABA transport. Unc-47 is expressed in GABA neurons, localizes to synaptic vesicles and confers vesicular GABA transport in transfected cells. Mutants of *C. elegans* in which the unc-47 gene encoding VGAT is non-functional or absent, exhibit a complete loss of GABAergic function and elevated levels of GABA in the cytoplasm.

VGAT is present in nerve endings of inhibitory neurons containing GABA, but also in glycinergic neurons in the brain and retina.^{1,4,5} At subcellular levels, VGAT specifically associates with synaptic vesicles.^{1,6} VGAT/VIAAT is also expressed in rat pancreatic islet cells.⁷

Reagent

The product is provided as a solution in 0.01 M phosphate buffered saline, pH 7.4, containing 15 mM sodium azide as a preservative.

Antibody concentration: 1.0-1.5 mg/ml

Precautions and Disclaimer

For R&D use only. Not for drug, household, or other uses. Please consult the Safety Data Sheet for information regarding hazards and safe handling practices.

Storage/Stability

For continuous use, store at 2–8 °C for up to one month. For extended storage freeze in working aliquots. Repeated freezing and thawing is not recommended. 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

A working concentration of 2-4 μ g/ml is determined by immunoblotting, using mouse brain and rat brain extracts (S1 fraction).

Note: In order to obtain the best results in various techniques and preparations, it is recommended to determine the optimal working dilution by titration.

References

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3. Ebihara, S. et al., Mouse vesicular GABA transporter gene: genomic organization, transcriptional regulation and chromosomal localization., *Brain Res. Mol. Brain Res.*, **110**, 126-139 (2003).
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