Technical Bulletin

Anti-Syntaxin 1

Produced in rabbit, IgG fraction of antiserum

S1172

Product Description

Anti-Syntaxin 1 is produced in rabbit using a highly purified GST1 fusion protein with the residues 1-265 of rat syntaxin 1A2,3 (intracellular, N-terminal). The serum was depleted of anti-GST antibodies by affinity chromatography on immobilized GST, and then the IgG fraction was isolated on immobilized protein A.

Anti-Syntaxin 1 recognizes both the 1A and 1B syntaxin proteins of rat and mouse by immunohistochemistry and immunoblotting.

Chemical neurotransmitters are stored within the nerve terminal in synaptic vesicles that are often found associated with cytoskeletal components or the pre-synaptic plasma membrane.[3] Upon nerve stimulation, activation of voltage-gated Ca^{2+} channels in the nerve terminal plasma membrane results in an influx of Ca^{2+}. The increase in cytosolic Ca^{2+} concentration triggers the fusion of a portion of the synaptic vesicle population with the presynaptic plasma membrane, resulting in the neurotransmitter release.

The docking and subsequent fusion of synaptic vesicles with the presynaptic plasma membrane occur at a restricted, morphologically distinct domain known as the active zone. The process of synaptic vesicle docking with the presynaptic membrane may represent the assembly of a prefusion complex that is likely to include components of each membrane. Three synaptic vesicle membrane proteins, synaptotagmin, synaptophysin,4 and synapsin I, exhibit properties suggestive of a role in synaptic vesicle docking or fusion. Syntaxin (also cited as HPC-1 antigen),[3,5] a 35 kDa molecule with carboxyl-terminal membrane anchor, is a synaptic protein identified by its ability to interact with the synaptic vesicle protein synaptotagmin. It has been implicated in docking at synaptic vesicles of presynaptic neurotransmitter release sites.[3,5,6] The molecular machinery for secretion seems to be conserved from yeast to neurons, since three genes have been identified in yeast that encode proteins with a carboxyl-terminal membrane anchor and significant homology to syntaxin, primarily over a 70 amino acid segment near the membrane anchor.[6,7] In addition, epimorphin, a protein expressed in mesenchymal cells that regulates the morphogenesis of adjacent epithelial cells, is also closely related (63% identical) to syntaxins A and B.[7] Antibodies reacting specifically against syntaxins are useful for studies on the molecular machinery of secretion, cellular heterogeneity, and the development of the central nervous system.

Reagents

Anti-Syntaxin 1 is supplied as lyophilized purified IgG fraction of antiserum. After reconstitution, the antibody solution is in phosphate buffered saline, pH 7.4, containing 1% BSA and 0.05% sodium azide.

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.

Preparation Instructions

Reconstitute the lyophilized vial with 0.05 mL or 0.2 mL deionized water, depending on the package size purchased. Further dilutions should be made using carrier protein such as BSA (1%).

Storage/Stability

Prior to reconstitution, store at - 20 °C. After reconstitution, the stock antibody solution may be stored at 2-8 °C for up to 2 weeks. For extended storage, 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

The recommended working dilution is 1:1,000 using rat brain membranes.

Immunohistochemistry

Rat brain sections are recommended. Anti-Syntaxin 1 is directed against an intracellular epitope. Thus, a procedure including permeabilization of cells with 0.2% TRITON™ X-100 is recommended.

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

Smith, D.B.and Johnson, K.S., *Gene*, **67**: 31 (1988).

Bennet, M.K. et al., *Science*, **257**: 255 (1992).

Inoue, A. and Akagawa, K., *Biochem. Biophys. Res. Commun*., **187**: 1144 (1992).

Devoto, S. and Barnstable, C., *Ann. N.Y. Acad. Sci*., **493**: 493 (1987).

Barinaga, M., (ed.), *Science*, **260**: 487 (1993).

Bennet, M. and Scheller, R., *Proc. Natl. Acad. Sci. (USA),* **90**: 2559 (1993).

Hirai, Y. et al., *Cell*, **73**: 425 (1993).

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