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Product Information

Anti-Substance P Receptor
produced in rabbit, IgG fraction of antiserum

Catalog Number **S8305**

Synonyms: Anti-NK1R; Anti-SPR

Product Description

Anti-Substance P Receptor is produced in rabbit using as immunogen a synthetic peptide KTMTESSSFYSNMLA, corresponding to the C-terminus of NK1R of rat origin (amino acids 393-407) conjugated to KLH. This sequence is highly conserved in mouse, guinea pig and human NK1R, but diverges in other tachykinin receptor subtypes NK2R and NK3R. Whole antiserum is purified to provide an IgG fraction of antiserum

Anti-Substance P Receptor may be used for the detection and localization of NK1 receptor subtype by immunoblotting using a rat brain extract, and in immunohistochemical staining of 4% paraformaldehyde/0.2% picric acid/0.05% glutaraldehyde perfusion-fixed frozen tissue sections of rat brain.

Substance P (SP), neurokinin A (NKA) and neurokinin B (NKB), belong to the tachykinin family of neuropeptides that are widely distributed in the peripheral and central nervous system.[1-3] The tachykinins have a wide range of biological activities. They are neurotransmitters or neuromodulators in the brain and spinal cord, potent stimulators of smooth muscle contraction and exocrine gland secretion, and mediate the process of neurogenic inflammation. Considerable interest has focused on the role of SP in the transmission of pain stimuli. SP is selectively localized in sensory systems, i.e. pain fibers in the skin, dorsal root ganglia, fine unmyelinated sensory fibers, in the dorsal horn of the spinal cord and in pain fibers of the trigeminal nucleus. In addition, SP is released in the spinal cord in response to noxious stimuli and has potent excitatory effect on dorsal horn neurons that respond to certain pain stimuli.[4] The mammalian tachykinins, act on multiple neurokinin receptors to induce their biological actions. Three different neurokinin receptors have been identified and cloned, NK1R, NK2R and NK3R, which are seven-transmembrane, G-proteins-coupled receptors.[5,6] These receptors are encoded by different genes and are differentially expressed in the brain and peripheral tissues. SP, NKA and NKB preferentially, but not exclusively, bind to NK1R, NK2R and NK3R, respectively.[2,7,8] SP has the highest affinity for NK1R (also known as SPR), and is considered the endogenous ligand for NK1R. NK1R is widely distributed in the brain and spinal cord.[9,10] Spinal cord neurons that express NK1R play a central role in the transmission of highly nociceptive stimuli and hyperalgesia.[11] The cellular responses mediated by NK1R are rapidly desensitized, after repeated exposure to SP, and gradually resensitize. The mechanism of receptor desensitization and resensitization, preventing uncontrolled stimulation of cells, is thought to involve receptor endocytosis and recycling, and receptor phosphorylation resulting in uncoupling from G-proteins. Following binding of SP, or somatosensory stimuli, the NK1R is rapidly internalized and gradually recycles both in transfected cells and *in vivo.*[11-13] Antibodies that react specifically with NK1R are useful for the study of the differential tissue expression, intracellular localization of NK1R in the CNS and the peripheral nervous system.

Anti-Substance P Receptor (NK1R, SPR) reacts specifically with NK1R (46 kDa), derived from rat brain. The antibody may be used in immunoblotting of rat brain membrane fraction extracts and in immunohistochemical staining of 4% paraformaldehyde/0.2% picric acid/0.05% glutaraldehyde perfusion-fixed frozen tissue sections of rat brain. Staining of the NK1R band (46 kDa) in immunoblotting is specifically inhibited with NK1R peptide (rat, amino acids 393-407).

Reagents

Supplied as a solution in 0.01 M phosphate buffered saline, pH 7.4, containing 15 mM sodium azide as a preservative.

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.

Storage/Stability
Store at 2-8 °C for up to one month. 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.

Product Profile
Immunoblotting: a minimum working dilution of 1: 2,000 is determined using a rat brain membrane fraction extract.

Indirect Immunoperoxidase Staining: a minimum working dilution of 1: 5,000 is determined using 4% paraformaldehyde/0.2% picric acid/0.05% glutaraldehyde perfusion-fixed, frozen free-floating sections of rat brain (neuronal cell bodies and dendrites).

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

References

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