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Product Information

Monoclonal Anti-Nicotinic Acetylcholine Receptor (α7 Subunit), clone mAb 306
produced in mouse, purified immunoglobulin

Catalog Number **M220**

Product Description

Monoclonal Anti-Nicotinic Acetylcholine Receptor (α7 Subunit) (mouse IgG1) is produced by immunizing mice with purified native and denatured α7 subunit (amino acids 380-400, bind to α-bungarotoxin) of the nicotinic acetylcholine receptor from chicken and denatured α7 subunit from rat as the immunogen. Antibody is then purified using Protein G affinity chromatography.

This antibody binds to native and denatured chick α7 subunit and to denatured rat and human α7. It does not bind well to native mammalian α7. It can also be used on chick, rat and human tissue.

Nicotinic acetylcholine receptors (nAChRs) are a family of ligand-gated ion channels that are classified on the basis of their activitation by nicotine, although acetylcholine (ACh) is the endogenous ligand. These conductance channels for Ca^{2+}, K^+ and Na^+ are pentameric in structure. Nine α (α1-α9) and three β (β1-β3) subunits have been cloned from mammalian and avian sources, each of which has a structural motif of four transmembrane spanning domains, M1-M4, of which M2 lines the channel. In addition, δ and γ(ε) subunits are associated with the skeletal muscle of the neuromuscular junction nAChR. The binding site for ACh is formed between α and adjoining structural subunits. The combinations of these various subunits offer a considerable scope for diversity in structure that has only in a few instances been associated with distinct functional effects. The predominant forms of nAChR in the CNS are the α4β2 and α7, the latter of which can form a functional pentameric homomer, although it is controversial whether this occurs in the native state. There is also evidence for an α3β2x combination.

In addition to the ACh/nicotinic binding site, nAChRs, like other ligand-gated ion channels, have modulatory sites. Sites are present in the channel for anesthetics like lidocaine and phencyclidine as well as the ubiquitous channel modulator, MK-801, and also for steroid and acetylcholinesterase inhibitors.

The anthelmintic, ivermectin, has been shown to potently modulate the α7 nAChR. Advances in understanding the role and therapeutic potential of neuronal nAChRs will be dependent on the development of tools, both molecular and chemical, that will allow the association of receptor structure with function.

Reagents

Supplied diluted in 20 mM sodium phosphate, pH 7.2,, containing 150 mM NaCl and 0.05% 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

For continuous use, store at -20°C for up to one month. For extended storage, solution may be stored at -80°C in working aliquots. Storage in “frost-free” freezers is not recommended. Repeated freezing and thawing is not recommended. If slight turbidity occurs upon prolonged storage, clarify by centrifugation before use.

Product Profile

Recommended starting titer for Monoclonal Anti-Nicotinic Acetylcholine Receptor (α7 Subunit) in immunohistochemical applications is 1:3,000 to 1:30,000 depending on receptor concentrations. A goat anti-mouse secondary antibody may be used. Optimal working concentration should be determined by serial dilutions.

References

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