

Recombinant Rat ACHA7 Protein

For Research Use Only

1. Basic Product Information

Catalog No.: REP52447

Size: 10ug, 100ug

Protein Name: Neuronal acetylcholine receptor subunit alpha-7 (nAChR7) (Nicotinic acetylcholine receptor subunit alpha-7)

Synonym: Chrna7, Acra7

UniProt ID: Q05941

UniProt Link: www.uniprot.org/uniprotkb/Q05941/entry

Species Source: Rat

Expression System: HEK293T eukaryotic cell expression system Sequence

Length: 502 AA

Molecular Weight: 57 KD

Protein Tag: C-terminal His6

2. Amino Acid Sequence

MCGGRGGIWLALAAALLHVSLQGEFQRRLYKELVKNYNPLERPVANDSQPLTVYFSLSLQIMDVDE
KNQVLTTNIWLQMSWTDHYLQWNMSEYPGVKNVRFPDGGQIWKPDILLYNSADERFDATFHTNVLVN
ASGHCQYLPPGIFKSSCYIDVRWFPPFDVQQCKLKFGSWSYGGWSLDLQMQEADISSYIPNGEWDL
MGIPGKRNEKFYECCKEPYPDVTYTVTMRRTLYYGLNLLIPCVLISALALLVLLPADSGEKISLGITV
LLSLTVFMLLVAEIMPATSDSVPLIAQYFASTMIIVGLSVVTVIVLRYHHHDPDGGKMPKWTRIILLNW
CAWFLRMKRPGEDKVRPACQHKPRRCSLASVELSAGAGPPTSNGNLLYIGFRGLEGMHCAPTPDS
GVVCGRLACSPTHDEHLMHGAHPSDGDPLAKILEEVRYIANRFRQCDESEVICSEWKFAACVVDR
LCLMAFSVFTIICTIGILMSAPNFVEAVSKDFA

3. Buffer Composition

Liquid format: PBS-based buffer containing 50% glycerol. Glycerol concentration can be customized upon customer request; please state special requirements when placing your order.

Lyophilized format: Buffer before lyophilization is PBS supplemented with 6% trehalose.

4. Storage Conditions

Upon receipt, store the product at -20 °C or -80 °C. Aliquot the product for on-demand use to preserve protein activity and prevent denaturation and inactivation caused by repeated freeze-thaw cycles.

5. Product Description

This product is recombinant Neuronal acetylcholine receptor subunit alpha-7 (nAChR7) (Nicotinic acetylcholine receptor subunit alpha-7) produced using the HEK293T eukaryotic cell expression system. It is suitable for in-vitro functional assays, protein-protein interaction studies, antibody preparation and other biomedical research applications.

Protein Function: Component of neuronal acetylcholine receptors (nAChRs) that function as pentameric, ligand-gated cation channels with high calcium permeability among other activities. nAChRs are excitatory neurotransmitter receptors formed by a collection of nAChR subunits known to mediate synaptic transmission in the nervous system and the neuromuscular junction. Each nAChR subunit confers differential attributes to channel properties, including activation, deactivation and desensitization kinetics, pH sensitivity, cation permeability, and binding to allosteric modulators (PubMed:17510177). CHRNA7 forms homopentameric neuronal acetylcholine receptors abundantly expressed in the central nervous system, characterized by fast desensitization and high calcium permeability. Also forms heteropentamers with CHRNB2, mainly expressed in basal forebrain cholinergic neurons (By similarity). Involved in the modulation of calcium-dependent signaling pathways and influences the release of neurotransmitters, including dopamine, glutamate and GABA (PubMed:17510177). Also expressed in non-neuronal cells such as immune cells like lymphocytes, monocytes and macrophages. In T cells, activation induces metabotropic signaling that results in an increase of intracellular Ca²⁺ concentrations, independent of ionotropic receptor functions (PubMed:17709503). In macrophages, required for acetylcholine-mediated inhibition of TNF and other inflammatory cytokine release. Once activated by acetylcholine, nicotine or other agonists, selectively inhibits production of pro-inflammatory cytokines while leaving anti-inflammatory cytokines undisturbed. Stimulates the cholinergic anti-inflammatory pathway, controlling inflammation by inhibiting NFkB nuclear translocation and activating the JAK2-STAT3 pathway, independently of ion channel activity (By similarity). Also expressed in the urothelium where it modulates reflex bladder activity by increasing intracellular calcium through internal stores and decreasing basal ATP release (PubMed:22250215).

Subcellular Localization: Postsynaptic cell membrane ; Multi-pass membrane protein . Cell membrane ; Multi-pass membrane protein . Note=RIC3 promotes its trafficking to the cell membrane (PubMed:15927954). TMEM35A/NACHO promotes its trafficking to the cell membrane (By similarity).

6. Notes

- Avoid repeated freeze-thaw cycles to maintain protein stability and biological activity.
- Please specify special buffer-composition requirements at the time of order placement.
- For research use only. Not intended for clinical diagnosis, therapeutic use or commercial manufacturing.