

Recombinant Human KCNA1 Protein (1-154 aa), His-tagged

Cat. No. KCNA1-592H **Lot. No.** (See product label)

SPECIFICATION

Product Overview	Recombinant Human KCNA1 Protein (1-154 aa) is produced by E. coli expression system. This protein is fused with a 6xHis tag at the N-terminal. Research Area: Neuroscience. Protein Description: Partial.
Species	Human
Source	E.coli
ProteinLength	1-154 aa
Description	Voltage-gated potassium channel that mediates transmembrane potassium transport in excitable membranes, primarily in the brain and the central nervous system, but also in the kidney. Contributes to the regulation of the membrane potential and nerve signaling, and prevents neuronal hyperexcitability. Forms tetrameric potassium-selective channels through which potassium ions pass in accordance with their electrochemical gradient. The channel alternates between opened and closed conformations in response to the voltage difference across the membrane. Can form functional homotetrameric channels and heterotetrameric channels that contain variable proportions of KCNA1, KCNA2, KCNA4, KCNA5, KCNA6, KCNA7, and possibly other family members as well; channel properties depend on the type of alpha subunits that are part of the channel. Channel properties are modulated by cytoplasmic domain beta subunits that regulate the subcellular location of the alpha subunits and promote rapid inactivation of delayed rectifier potassium channels. In vivo, membranes probably contain a mixture of heteromeric potassium channel complexes, making it difficult to assign currents

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observed in intact tissues to any particular potassium channel family member. Homotetrameric KCNA1 forms a delayed-rectifier potassium channel that opens in response to membrane depolarization, followed by slow spontaneous channel closure. In contrast, a heterotetrameric channel formed by KCNA1 and KCNA4 shows rapid inactivation. Regulates neuronal excitability in hippocampus, especially in mossy fibers and medial perforant path axons, preventing neuronal hyperexcitability. Response to toxins that are selective for KCNA1, respectively for KCNA2, suggests that heteromeric potassium channels composed of both KCNA1 and KCNA2 play a role in packaging and regulate the output of deep cerebellar nuclear neurons. May function as down-stream effector for G protein-coupled receptors and inhibit GABAergic inputs to basolateral amygdala neurons. May contribute to the regulation of neurotransmitter release, such as gamma-aminobutyric acid (GABA) release. Plays a role in regulating the generation of action potentials and preventing hyperexcitability in myelinated axons of the vagus nerve, and thereby contributes to the regulation of heart contraction. Required for normal neuromuscular responses. Regulates the frequency of neuronal action potential firing in response to mechanical stimuli, and plays a role in the perception of pain caused by mechanical stimuli, but does not play a role in the perception of pain due to heat stimuli. Required for normal responses to auditory stimuli and precise location of sound sources, but not for sound perception. The use of toxins that block specific channels suggest that it contributes to the regulation of the axonal release of the neurotransmitter dopamine. Required for normal postnatal brain development and normal proliferation of neuronal precursor cells in the brain. Plays a role in the reabsorption of Mg^{2+} in the distal convoluted tubules in the kidney and in magnesium ion homeostasis, probably via its effect on the membrane potential.

Form	Tris-based buffer, 50% glycerol
Molecular Mass	22.2 kDa

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AA Sequence	MTVMSENVDEASAAPGHPQDGSYPRQADHDDHECCERVVINISGLRFETQLKTLA QFPNTLLGNPKKRMRYFDPLRNEYFFDRNRPSFDAILYYYQSGGRLRRPVNVPLDM FSEEEKFYELGEEAMEKFREDEGFIKEEERPLPEKEYQRQVW
Purity	> 90% as determined by SDS-PAGE.
Notes	Repeated freezing and thawing is not recommended. Store working aliquots at 4 centigrade for up to one week.
Storage	The shelf life is related to many factors, storage state, buffer ingredients, storage temperature and the stability of the protein itself. Generally, the shelf life of liquid form is 6 months at -20 centigrade/-80 centigrade. The shelf life of lyophilized form is 12 months at -20 centigrade/-80 centigrade.
Concentration	A hardcopy of COA with concentration instruction is sent along with the products.

GENE INFORMATION

Gene Name	KCNA1 potassium voltage-gated channel, shaker-related subfamily, member 1 (episodic ataxia with myokymia) [Homo sapiens]
Official Symbol	KCNA1
Synonyms	KCNA1; AEMK; HUK1; Kv1.1; MBK1; RBK1; EA1; MK1; HBK1; KV1.1; MGC126782; MGC138385;
Gene ID	3736
mRNA Refseq	NM_000217
Protein Refseq	NP_000208

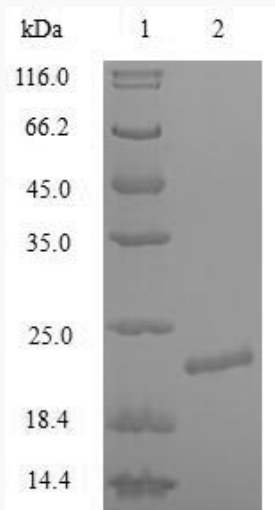
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MIM 176260

UniProt ID Q09470



(Tris-Glycine gel) Discontinuous SDS-PAGE (reduced) with 5% enrichment gel and 15% separation gel.

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