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KCNK1 Antibody

Catalog # ASC11868

Product Information

Application	WB, IF, E, IHC-P
Primary Accession	O00180
Other Accession	NP_002236, 4504847
Reactivity	Human, Mouse, Rat
Host	Rabbit
Clonality	Polyclonal
Isotype	IgG
Calculated MW	38143
Concentration (mg/ml)	1 mg/mL
Conjugate	Unconjugated
Application Notes	KCNK1 antibody can be used for detection of KCNK1 by Western blot at 1 - 2 g/ml. Antibody can also be used for immunohistochemistry starting at 5 g/mL. For immunofluorescence start at 20 g/mL.

Additional Information

Gene ID	3775
Other Names	Potassium channel subfamily K member 1, Inward rectifying potassium channel protein TWIK-1, Potassium channel KCNO1, KCNK1, HOHO1, KCNO1, TWIK1
Target/Specificity	KCNK1; KCNK1 antibody is human, mouse and rat reactive. KCNK1 antibody is predicted to not cross-react with other KCNK proteins.
Reconstitution & Storage	KCNK1 antibody can be stored at 4℃ for three months and -20℃, stable for up to one year.
Precautions	KCNK1 Antibody is for research use only and not for use in diagnostic or therapeutic procedures.

Protein Information

Name	KCNK1
Synonyms	HOHO1 {ECO:0000303|PubMed:9462864}, KCNO
Function	Ion channel that contributes to passive transmembrane potassium transport and to the regulation of the resting membrane potential in brain astrocytes, but also in kidney and in other tissues (PubMed:15820677, PubMed:21653227). Forms dimeric channels through which potassium ions pass in accordance with their electrochemical gradient (PubMed:22282804). The channel is selective for K(+) ions at physiological potassium concentrations and at neutral pH, but becomes permeable to Na(+) at

subphysiological K(+) levels and upon acidification of the extracellular medium (PubMed:21653227, PubMed:22431633). The homodimer has very low potassium channel activity, when expressed in heterologous systems, and can function as weakly inward rectifying potassium channel (PubMed:15820677, PubMed:21653227, PubMed:22431633, PubMed:23169818, PubMed:25001086, PubMed:8605869, PubMed:8978667). Channel activity is modulated by activation of serotonin receptors (By similarity). Heterodimeric channels containing KCNK1 and KCNK2 have much higher activity, and may represent the predominant form in astrocytes (By similarity). Heterodimeric channels containing KCNK1 and KCNK3 or KCNK9 have much higher activity (PubMed:23169818). Heterodimeric channels formed by KCNK1 and KCNK9 may contribute to halothane-sensitive currents (PubMed:23169818). Mediates outward rectifying potassium currents in dentate gyrus granule cells and contributes to the regulation of their resting membrane potential (By similarity). Contributes to the regulation of action potential firing in dentate gyrus granule cells and down-regulates their intrinsic excitability (By similarity). In astrocytes, the heterodimer formed by KCNK1 and KCNK2 is required for rapid glutamate release in response to activation of G protein-coupled receptors, such as F2R and CNR1 (By similarity). Required for normal ion and water transport in the kidney (By similarity). Contributes to the regulation of the resting membrane potential of pancreatic beta cells (By similarity). The low channel activity of homodimeric KCNK1 may be due to sumoylation (PubMed:15820677, PubMed:20498050, PubMed:23169818). The low channel activity may be due to rapid internalization from the cell membrane and retention in recycling endosomes (PubMed:19959478). Permeable to monovalent cations with ion selectivity for K(+) > Rb(+) >> NH4(+) >> Cs(+) = Na(+) = Li(+).

Cellular Location

Cell membrane; Multi-pass membrane protein {ECO:0000269|PubMed:22282804, ECO:0000269|PubMed:8978667, ECO:0000305} Recycling endosome. Synaptic cell membrane {ECO:0000250|UniProtKB:Q9Z2T2}. Cytoplasmic vesicle {ECO:0000250|UniProtKB:O08581}. Perikaryon {ECO:0000250|UniProtKB:O08581}. Cell projection, dendrite {ECO:0000250|UniProtKB:O08581}. Cell projection {ECO:0000250|UniProtKB:O08581}. Apical cell membrane; Multi-pass membrane protein. Note=The heterodimer with KCNK2 is detected at the astrocyte cell membrane. Not detected at the astrocyte cell membrane when KCNK2 is absent. Detected on neuronal cell bodies, and to a lesser degree on neuronal cell projections. Detected on hippocampus dentate gyrus granule cell bodies and to a lesser degree on proximal dendrites Detected at the apical cell membrane in stria vascularis in the cochlea. Detected at the apical cell membrane of vestibular dark cells situated between the crista and the utricle in the inner ear. Detected at the apical cell membrane in kidney proximal tubule segment S1 and in subapical compartments in segments S1, S2 and S3. Predominantly in cytoplasmic structures in kidney distal convoluted tubules and collecting ducts (By similarity). Detected at the apical cell membrane of bronchial epithelial cells (PubMed:21964404) {ECO:0000250|UniProtKB:O08581, ECO:0000250|UniProtKB:Q9Z2T2, ECO:0000269|PubMed:21964404}

Tissue Location

Detected in bronchial epithelial cells (PubMed:21964404). Detected in heart left atrium and left ventricle (PubMed:17478540). Detected in cardiac myocytes (at protein level) (PubMed:21653227). Widely expressed with high levels in heart, brain and kidney, and lower levels in colon, ovary, placenta, lung and liver (PubMed:8605869, PubMed:9362344). Highly expressed in cerebellum, and detected at lower levels in amygdala, caudate nucleus, brain cortex, hippocampus, putamen, substantia nigra, thalamus, dorsal root ganglion, spinal cord, pituitary, heart, kidney, lung, placenta, pancreas, stomach, small intestine, uterus and prostate (PubMed:11165377) Detected in

right and left heart ventricle and atrium, and in heart Purkinje fibers (PubMed:17478540).

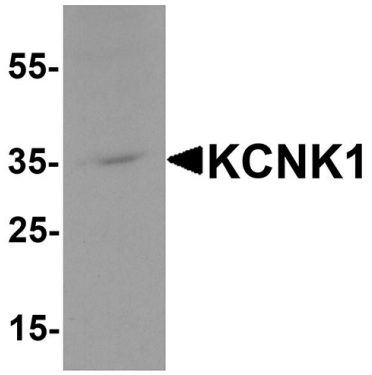
Background

The potassium channel, subfamily K, member 1 (KCNK1), is member of the superfamily of potassium channel proteins containing two pore-forming P domains (1,2). KCNK1 is a ubiquitous human weakly inward rectifying K+ channel that is widely expressed in human tissues, and particularly abundant in brain and heart (1). Both KCNK1 and the related protein KCNK2 contribute significantly to the passive conductance of hippocampal astrocytes (3).

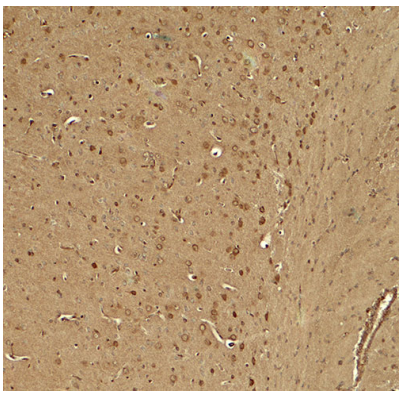
References

Lesage F, Guillemare E, Fink M, et al. TWIK-1, a ubiquitous human weakly inward rectifying K+ channel with a novel structure. EMBO J. 1996; 15:1004-11.
Goldstein SA, Bockenhauer D, O'Kelly I, et al. Potassium leak channels and the KCNK family of two-P domain subunits. Nat. Rev. Neurosci. 2001; 2:175-84.
Zhou M, Xu G, Xie M, et al. TWIK-1 and TREK-2 are potassium channels contributing significantly to astrocyte passive conductance in rat hippocampal slides. J. Neurosci. 2009; 29:8551-64.

Images

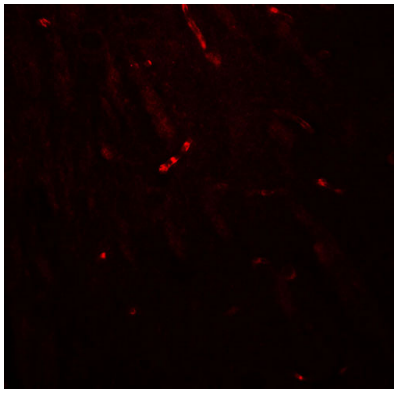


Western blot analysis of KCNK1 in 3T3 cell lysate with KCNK1 antibody at 1 µg/ml.



Immunohistochemistry of KCNK1 in mouse brain tissue with KCNK1 antibody at 5 µg/ml.

Immunofluorescence of KCNK1 in mouse brain tissue with KCNK1 antibody at 20 µg/ml.



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