SANTA CRUZ BIOTECHNOLOGY, INC.

KV1.5 (A-3): sc-377110

SANTA CRUZ BIOTECHNOLOGY

The Power to Question

BACKGROUND

Voltage-gated K^+ channels in the plasma membrane control the repolarization and the frequency of action potentials in neurons, muscles, and other excitable cells. The KV gene family encodes more than 30 genes that comprise the subunits of the K^+ channels, and they vary in their gating and permeation properties, subcellular distribution, and expression patterns. Functional KV channels assemble as tetramers consisting of pore-forming α-subunits (KVα), which include the KV1, KV2, KV3, and KV4 proteins, and accessory or KVβ subunits that modify the gating properties of the coexpressed KVα subunits. Differences exist in the patterns of trafficking, biosynthetic processing and surface expression of the major KV1 subunits (KV1.1, KV1.2, KV1.4, KV1.5 and KV1.6) expressed in rat and human brain, suggesting that the individual protein subunits are highly regulated to control for the assembly and formation of functional neuronal channels.

REFERENCES

1. Deal, K.K., et al. 1994. The brain KV1.1 potassium channel: *in vitro* and *in vivo* studies on subunit assembly and posttranslational processing. J. Neurosci. 14: 1666-1676.
2. Veh, R.W., et al. 1995. Immunohistochemical localization of five members of the KV1 channel subunits: contrasting subcellular locations and neuron-specific co-localizations in rat brain. Eur. J. Neurosci. 7: 2189-2205.

CHROMOSOMAL LOCATION

Genetic locus: KCNA5 (human) mapping to 12p13.32.

SOURCE

KV1.5 (A-3) is a mouse monoclonal antibody specific for an epitope mapping between amino acids 5-39 near the N-terminus of KV1.5 of human origin.

PRODUCT

Each vial contains 200 µg IgG_3 kappa light chain in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

Blocking peptide available for competition studies, sc-377110 P, (100 µg peptide in 0.5 ml PBS containing < 0.1% sodium azide and 0.2% stabilizer protein).

APPLICATIONS

KV1.5 (A-3) is recommended for detection of KV1.5 of human origin by Western Blotting (starting dilution 1:100, dilution range 1:100-1:1000), immunoprecipitation [1-2 µg per 100-500 µg of total protein (1 ml of cell lysate)], immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500) and solid phase ELISA (starting dilution 1:30, dilution range 1:30-1:3000).

Suitable for use as control antibody for KV1.5 siRNA (h): sc-42716, KV1.5 shRNA Plasmid (h): sc-42716-SH and KV1.5 shRNA (h) Lentiviral Particles: sc-42716-V.

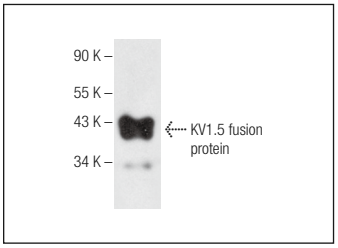
Molecular Weight of KV1.5: 76 kDa.

Positive Controls: U-87 MG cell lysate: sc-2411 or H4 cell lysate: sc-2408.

STORAGE

Store at 4° C, **DO NOT FREEZE**. Stable for one year from the date of shipment. Non-hazardous. No MSDS required.

DATA



KV1.5 (A-3): sc-377110. Western blot analysis of human recombinant KV1.5 fusion protein.

SELECT PRODUCT CITATIONS

1. Gao, M., et al. 2013. An altered expression of genes involved in the regulation of ion channels in atrial myocytes is correlated with the risk of atrial fibrillation in patients with heart failure. Exp. Ther. Med. 5: 1239-1243.
2. Klutho, P.J., et al. 2015. Deletion of methionine sulfoxide reductase A does not affect atherothrombosis but promotes neointimal hyperplasia and extracellular signal-regulated kinase 1/2 signaling. Arterioscler. Thromb. Vasc. Biol. 35: 2594-2604.
3. Marczenke, M., et al. 2017. Cardiac subtype-specific modeling of KV1.5 Ion channel deficiency using human pluripotent stem cells. Front. Physiol. 8: 469.
4. Argenziano, M., et al. 2018. Electrophysiologic characterization of calcium handling in human induced pluripotent stem cell-derived atrial cardiomyocytes. Stem Cell Reports 10: 1867-1878.
5. Rodgers, J.L., et al. 2018. Hyperoxia-induced cardiotoxicity and ventricular remodeling in type-II diabetes mice. Heart Vessels 33: 561-572.
6. Song, S., et al. 2020. Notch enhances Ca^{2+} entry by activating calcium-sensing receptors and inhibiting voltage-gated K^+ channels. Am. J. Physiol., Cell Physiol. 318: C954-C968.
7. Du, Y., et al. 2021. KV1.5 channels are regulated by PKC-mediated endocytic degradation. J. Biol. Chem. 296: 100514.
8. Qian, L.L., et al. 2021. Changes in ion channel expression and function associated with cardiac arrhythmogenic remodeling by Sorbs2. Biochim. Biophys. Acta Mol. Basis Dis. 1867: 166247.
9. Wang, K., et al. 2022. Interaction of KCNA5, CX43, and CX40 proteins in the atrial muscle of patients with atrial fibrillation. Cell Biol. Int. 46: 1834-1840.
10. Chakraborty, A., et al. 2024. Ubiquitination is involved in PKC-mediated degradation of cell surface Kv1.5 channels. J. Biol. Chem. 300: 107483.

RESEARCH USE

For research use only, not for use in diagnostic procedures.