

Product Information

Anti-Potassium Channel K_v3.1b

produced in rabbit, affinity isolated antibody

Catalog Number **P9732**

Product Description

Anti-Potassium Channel K_v3.1b is produced in rabbit using as immunogen a synthetic peptide corresponding to amino acids 567-585 of rat potassium channel K_v3.1b.^{1,2} This epitope is not present in the alternatively spliced K_v3.1a form.^{2,3} The antibody is affinity isolated using peptide-agarose.

Anti-Potassium Channel K_v3.1b recognizes a full-length K_v3.1b protein in dog, monkey, mouse and rat. The antibody may also be used for immunohistochemistry.^{2,4}

Chloride channels have several functions including: regulating cell volume, membrane potential stabilization, signal transduction, and transepithelial transport. The CLC chloride channel family, which includes voltage-gated chloride channels, represents one of the structural families of chloride channels. Mammals have at least nine different members.⁵ CLC-2 channels exhibit differential brain distribution and are implicated in regulating and maintaining the chloride gradient in cells that exhibit primarily inhibitory GABA_A responses.⁶ CLC-3 channels are important in cardiac function and their volume sensitivity may be due to PKC/PKA modulated phosphorylation.⁷

Voltage-gated sodium channels (VGSC) are present in most excitable cells. In neuronal tissue, they are responsible for generating and propagating action potentials. Brain VGSC are heteromers of $\alpha\beta1\beta2$ subunits. Of these, the α subunit forms the channel pore. Twelve α subunit genes have been identified.⁸ VGSC have been implicated in numerous neurological and cardiac disorders. Further, VGSC are important in mediating many therapeutic drug effects, including the actions of anesthetics, antiarrhythmics and antiepileptics.^{9,10}

Potassium channels contribute to maintaining cell volume, membrane potential, neuronal excitability and the secretion of transmitters, salt and hormones. Two families of potassium channels have been identified. One family includes the inwardly rectifying potassium channels, whereas the other family includes: voltage-sensing (KV); big conductance, calcium activated (BK_{CA}); and small conductance, calcium activated (SK) potassium channels. In neuronal tissue, BK and SK channels modulate the action potential duration, the speed of repolarization and the after hyperpolarization.^{11,12} These channels are implicated both in therapeutic drug effects and also in disease.¹¹⁻¹³ KV channels have been implicated in activity-dependent, plastic changes in neuronal tissue.^{14,15} HERG (human ether-a-go-go-related gene) is similar to the delayed rectifier channel and is important in cardiac function and may also play a role in certain cardiac arrhythmias.¹⁶

Many subunits that form the ion channels have been cloned and expressed. With the combination of molecular biology and electrophysiology, much has been learned about the structure and function of the ion channels, but much remains to be determined about the *in vivo* physiological roles of the ion channel subtypes and also in their roles in mediating therapeutic drug effects.

Monovalent ion channels are associated with a number of diseases.^{10,17} Further research is required to determine the physiological function and role of Cl, K and Na channel subtypes, as well as the ion channels themselves, in the hopes of discovering new treatments for these pathologies.

Reagent

Supplied as a lyophilized powder from a solution with ~0.8 mg/mL antibody in phosphate buffered saline, pH 7.4, containing 1% bovine serum albumin, 5% sucrose and 0.025% 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

Prior to reconstitution, store at -20°C . After reconstitution, the stock antibody solution may be stored at $2-8^{\circ}\text{C}$ for up to one month. For extended storage, freeze in working aliquots. Repeated freezing and thawing, or storage in "frost-free" freezers, is not recommended. If slight turbidity occurs upon prolonged storage, clarify the solution by centrifugation before use. Working dilutions should be discarded if not used within 12 hours.

Preparation Instructions

Reconstitute the lyophilized vial with 0.05 ml or 0.2 ml deionized water. Antibody dilutions should be made in buffer containing 1-3% bovine serum albumin.

Product Profile

Immunoblotting: a working antibody dilution of 1:200-1:400 is determined using rat brain sections.

Note: In order to obtain the best results using various techniques and preparations, we recommend determining the optimal working dilutions by titration.

References

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