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Anti-K_v1.4

Kcna4



Antigen included | Shipped at room temp. | QC tested

Cat #: APC-007 | **Size:** 50 µl, 0.2 ml | **Source:** Rabbit | **Type:** Polyclonal

Application: IC, IH, WB

Reactivity: H, M, R

May also work in: IFC, IP

Application key: CBE- Cell-based ELISA, FC- Flow cytometry, IC- Immunocytochemistry, IE- Indirect ELISA, IFC- Indirect flow cytometry, IH- Immunohistochemistry, IP- Immunoprecipitation, LCI- Live cell imaging, N- Neutralization, WB- Western blot
 Species reactivity key: H- Human, M- Mouse, R- Rat

Control antigen included

Lyophilized powder

General information

Alomone Labs is pleased to offer a highly specific antibody directed against an epitope of rat K_v1.4. **Anti-K_v1.4** antibody (#APC-007) can be used in western blot, immunocytochemistry and immunohistochemistry applications. It has been designed to recognize K_v1.4 from human, rat and mouse samples.

Related products for control experiments:

Control peptide antigen (supplied with the antibody free of charge).

Anti-K_v1.4 antibody (#APC-007) in the literature:

Western blot analysis (WB):

- Rat heart lysate (see Hsueh, C.H. *et al.* (2014) in Product Citations).

Immunohistochemistry (IH):

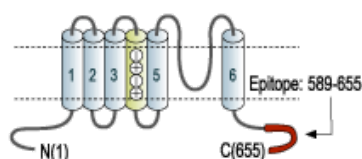
- Rat DRGs (see Takahashi, R. *et al.* (2013) in Product Citations).

If you know of a relevant citation for this product **please let us know**.

Specifications

Immunogen

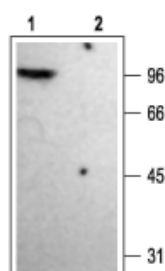
GST fusion protein with sequence PYLPSNLLKKFRSSTSSSLGDKSEYLEMEEGVKESLCGKEE KCQKGDDSETDKNNCSNAKAVETDV, corresponding to amino acid residues 589-655 of rat K_v1.4 (Accession [P15385](#)). Intracellular, C-terminus.



Homology	Mouse - identical; human - 66/67 (or 65/67) amino acid residues identical; bovine - 64/67 amino acid residues identical.
Purity	The serum was depleted of anti-GST antibodies by affinity chromatography on immobilized GST and on possible cross-reactive antibodies to other Kv1 on immobilized homologous region of Kv1.1-GST, and then the antibody was affinity purified on immobilized Kv1.4-GST.
Formulation	Lyophilized powder. Reconstituted antibody contains phosphate buffered saline (PBS), pH 7.4, 1% BSA, 5% sucrose, 0.025% NaN ₃ .
Standard quality control of each lot	Western blot analysis.

Applications

Western blot



Western blot analysis of rat brain membranes:

1. Anti-K_V1.4 antibody (#APC-007), (1:200).
2. Anti-K_V1.4 antibody, preincubated with the control peptide antigen.

Human left heart ventricle (1:50-1:100) (see Szentadrassy, N. *et al.* (2005) *Cardiovasc. Res.* **65**, 851.).

Immunohistochemistry Rat brain sections (see also 7-9 in publications using this product).

Immunocytochemistry Rat neural progenitor cells (NPCs) (1:200) (see Liebau, S. *et al.* (2006) *J. Neurochem.* **99**, 426.).

Scientific background

Scientific background K_V1.4 is a mammalian voltage dependent K⁺ channel, homologous to the *Drosophila Shaker* K⁺ channel. K_V1.4 was first cloned from rat brain.¹ Eight *Shaker*-related genes exist in mammals constituting the K_V1, subfamily of the large K_V channel family of genes.²

A functional K_V1 channel is either a membrane spanning homotetramer or heterotetramer, which is composed of members of the same subfamily. In addition several auxiliary subunits and intracellular proteins might interact with the channel and affect its function.

The structure of K_V1.4 channel is similar to all K_V channels and includes six membrane spanning helices creating a voltage

sensor domain and a pore domain.²

The channel is expressed in neurons and cardiac and skeletal muscle tissue as well as in pancreas.² The functional channel is considered transient (A-type) current and shows pronounced inactivation. Therefore, this channel activity influences the membrane potential and excitability of neurons and muscle.

K_V1.4 channels are sensitive to high doses of TEA (>100 mM) and low doses of 4-AP (0.013 mM), the “classical” non-selective potassium channel blockers.

Most venomous peptide toxins that affect other K_V channels do not inhibit K_V1.4. However, the sea anemone toxin **Stichodactyla Toxin** (ShK) (#RTS-400), which is more potent towards K_V1.1 and K_V1.3 is still a potent inhibitor of K_V1.4 channels.³

References

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2. Gutman, G.A. *et al.* (2005) *Pharmacol. Rev.* **57**, 473.
3. Bogin, O. (2006) *Modulator* **21**, 28.

Product Citation

Publications using this product

1. Takahashi, R. *et al.* (2013) *J. Urol.* **190**, 2296.
2. Riley, D. *et al.* (2010) *J. Appl. Physiol.* **108**, 1003.
3. Hayashi, Y. *et al.* (2009) *Am J. Physiol.* **296**, R1661.
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6. Liebau, S. *et al.* (2006) *J. Neurochem.* **99**, 426.
7. Rose, J. *et al.* (2005) *Am. J. Physiol.* **288**, H2077.
8. Szentadrassy, N. *et al.* (2005) *Cardiovasc. Res.* **65**, 851.
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16. MacDonald, P.E. *et al.* (2002) *J. Biol. Chem.* **277**, 44938.
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21. Guo, W. *et al.* (1998) *J. Mol. Cell Cardiol.* **30**, 1449.
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27. Hsueh, C.H. *et al.* (2014) *J. Am. Soc. Nephrol.* pii: ASN.2013121343.