PrecisION® hKv7.4/hKv7.5 Recombinant Stable Cell Line

Catalog Number CYL3096 **Lot Number** See Vial

Contents 2 Vials, 2 x 10^6 to 4 x 10^6 in 1 mL

Background Information

Potassium ion channels are the most widely distributed of ion channels and are found in almost all living organisms. A typical voltage gated potassium ion channel has a tetrameric structure consisting of 4 protein subunits combining to form a central ion conducting pore across the cell membrane. Voltage gated ion channels open and close in response to changes in the transmembrane voltage. Additional information can be found on page 2.

Product Information

Description Recombinant HEK 293 cell line expressing the human voltage-gated potassium ion channels Kv7.4 and Kv7.5

Family Potassium, Voltage-Gated

Target Kv7.4/Kv7.5

	Target Protein	Accession Number
1	Kv7.4	NM_004700
2	Kv7.5	NM_001160133
3	N/A	N/A
4	N/A	N/A

Species Human

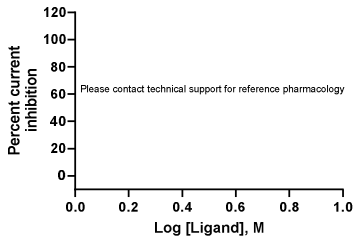
Host Cell Type HEK 293

Application Electrophysiology assay (conventional and automated patch clamp platforms)

Storage Vials are to be stored in vapor phase of liquid nitrogen

Functional Performance

HEK293 cells expressing hKv7.4/hKv7.5 were characterized in terms of their pharmacological and biophysical properties using whole-cell patch clamp techniques.



Electrophysiology Method MPC

Reference Agonist Retigabine

Reference Antagonist Linopridine

Antagonist IC_{50} (μM)

Passage Stability

Please contact technical support.

Mycoplasma Testing

This lot was tested and found to be free of mycoplasma contamination. Data available upon request.

Notes

Additional functional (pharmacological and electrophysiological) validation on multiple platforms is available upon request.

Additional Ligand Information

Control Compound	Linopridine
Vendor Name :	Sigma-Aldrich
Vendor Catalog No.	L134

Additional Background Information

KCNQ genes encode Kv7 potassium channels that have been associated with both cardiac and hearing abnormalities in humans, most notably the KNCQ1 gene (Neyroud et al., 1997). Using a partial KCNQ3 cDNA Kubisch et al. (1999) screened a human retinal cDNA λ phage library and obtained a novel homolog they named KCNQ4. When expressed in Xenopus oocytes KCNQ4 encodes potassium current (Kv7.4) inhibited by 30% in the presence of 200 µM linopirdine, whereas the current due to KCNQ3/KCNQ4 (Kv7.3/Kv7.4) heteromers in the same study was inhibited by 75% at that concentration. Schroeder et al. (2000) used a KCNQ3 cDNA probe to obtain a KCNQ fragment from a human thalamus cDNA library. Amplification & extension techniques subsequently yielded a full-length KCNQ5 (Kv7.5) gene. These authors also mapped the KCNQ5 gene to the 6q14 region of the human chromosome. Brueggemann et al. (2007) found that the inhibition of native potassium currents in A7r5 rat aortic smooth muscle cells by vasopressin was PKC-dependent, and the current amplitude was decreased when RNA interference techniques directed toward KCNQ5 were utilized. Rat middle cerebral arteries have an expression profile of KCNQ4>KCNQ5>KCNQ1 (Zhong et al. (2010) in the sarcolemmal membrane, and linopirdine enhances the myogenic response of the isolated arteries. Agents that open

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