



Stably Transfected Cell Line - Product Data Sheet
hK_v1.5-CHO
Catalog Number CT6137

Related Services and Products

FastPatch[®] and ScreenPatch[™] automated patch clamp services
Replicating hK_v1.5-HEK cell line. Cat. No. CT6138
Additional information available at www.chantest.com

Contact Information

ChanTest Corporation
14656 Neo Parkway
Cleveland OH 44128
Tel: (216) 584-0590
Fax: (216) 584-0591

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1 Cell Line Description

1.1 Background

K_v1.5 is a voltage-gated, K⁺-selective channel expressed in aorta, heart, colon, kidney, stomach, smooth muscle, central nervous system, pituitary, and pulmonary artery. In the heart, K_v1.5 is responsible for I_{Kur}, the ultra-rapid delayed rectifier potassium current. The channel is a potential therapeutic target in multiple sclerosis, atrial fibrillation, and pulmonary hypertension.

1.2 Pore-forming subunit identifier: hK_v1.5

Class: Voltage-gated potassium channel
Species: Human
Gene name: KCNA5

1.3 Sequence Information

The cDNA sequence of the KCNA5 gene used to create this cell line was confirmed prior to transfection. The amino acid sequence encoded by the transfected cDNA is identical to the translated sequence for GenBank accession number NM_002234.2.

1.4 Expression System

CHO (Chinese hamster ovary) cells, constitutive expression.

1.5 Product Format

Cryopreserved cells, 1 x10⁶ cells/vial.

1.6 Mycoplasma Status: Negative

The absence of mycoplasma species in this cell line was confirmed with the MycoAlert Kit (Lonza Rockland, Inc.).

1.7 Cell Line Stability

Channel expression in this cell line has been stable for at least 96 passages.

2 Validated Test Platforms

Electrophysiological and pharmacological verification of the functional properties of the cloned channels was assessed in the following test platforms:

PatchXpress[®] (MDS-AT)
QPatch[™] (Sophion)
IonWorks[®] Quattro[™] (MDS-AT)

2.1 PatchXpress[®] Representative Data

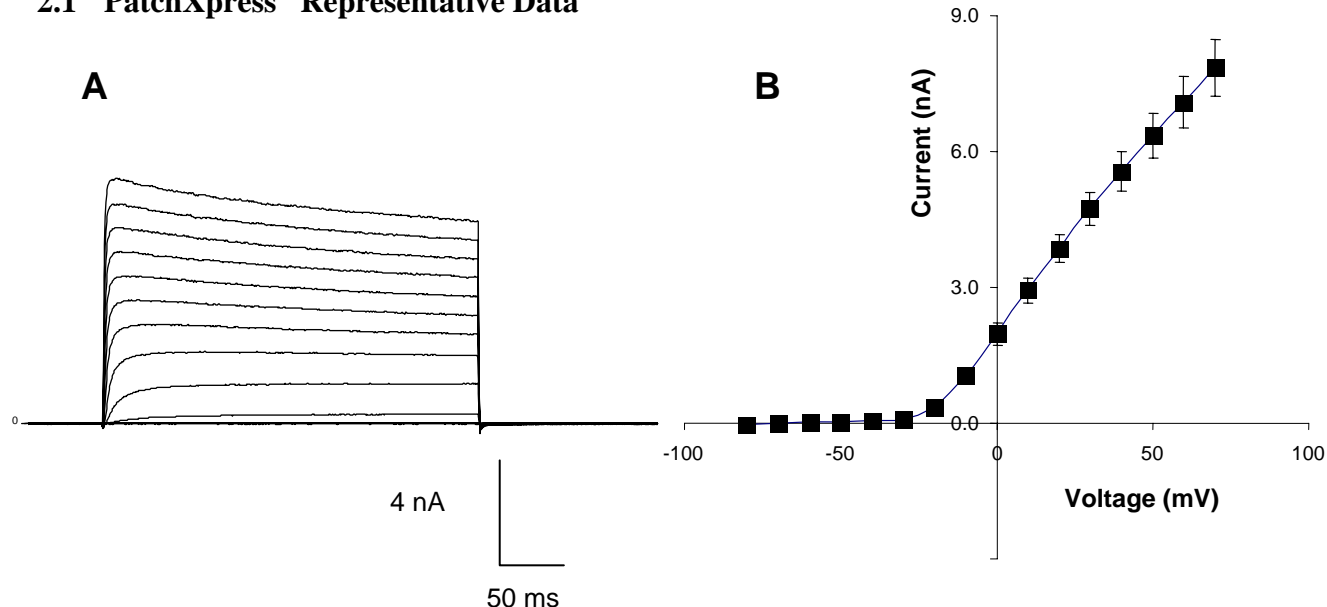


Figure 1. Voltage-Dependent Kv1.5 Activation in PatchXpress[®]

A: Currents elicited by test pulses ranging from -80 to +70 mV in 10 mV increments, -80 mV holding potential. **B:** Current-voltage relationship. Mean \pm SEM, n = 8 cells.

2.2 QPatch[™] Representative Data

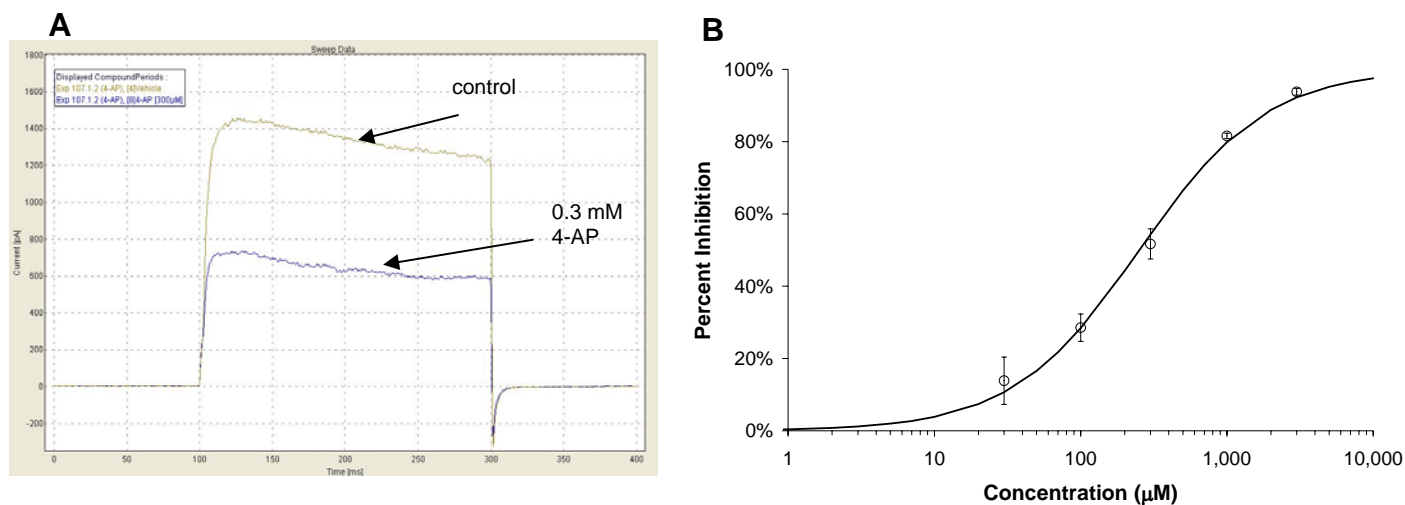


Figure 2. 4-Aminopyridine (4-AP) Block in QPatch[™]

A: hK_v1.5 current traces elicited by 200-ms test pulses to +20 mV before (control) and after application of 0.3 mM 4-AP. Holding potential -80 mV. Horizontal and vertical calibrations are 50 ms and 0.2 nA, respectively. **B:** Concentration-response relationship. Mean \pm SEM (n = 4 - 5 cells/concentration). IC₅₀ = 250 μ M.

2.3 IonWorks® Quattro™ Representative Data

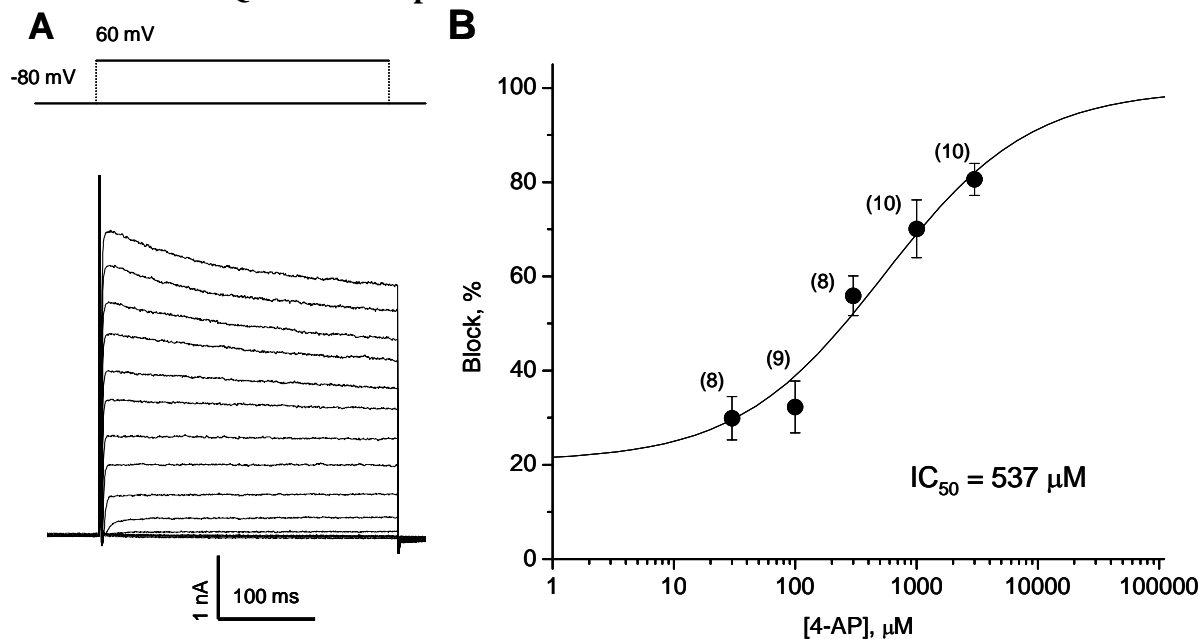


Figure 3. Voltage-dependent Gating and 4-Aminopyridine Block in IonWorks® Quattro™

A: hK_v1.5 currents elicited by 300-ms test pulses from -80 to +60 mV in 10 mV increments from holding potential -80 mV. **B:** 4-AP concentration-response relationship. Mean ± SD (n = 8 - 10 replicates/concentration). IC₅₀ = 0.54 mM.

3 References

Grissmer S, et al. 1994. Pharmacological characterization of five cloned voltage-gated K⁺ channels, types Kv1.1, 1.2, 1.3, 1.5, and 3.1, stably expressed in mammalian cell lines. *Mol Pharmacol* 45:1227-1234.

Gutman GA, et al. 2005. International Union of Pharmacology. LIII. Nomenclature and molecular relationships of voltage-gated potassium channels. *Pharmacol Rev.* 57:473-508.