Kv1.3 – Potassium Voltaged-Gated Channel Subfamily A, Member 3

Product specification

Acronym: Kv1.3
Origin species: Mouse
Protein reference : P01654 (UniProtKB)
Family: Ion Channel
Expression system: E.coli based CFPS
Format: Proteoliposomes
Protein sequence: Met1 - Val528
Tag : Histidine tag fused to the N-terminal end of the protein
Cleavage site: Factor Xa
Product MW: 58 kDa
Application: Drug screening & discovery, structural biology

Product description

Kv1.3 is a voltaged-gated potassium channel that participates in the cellular processes such as neuronal excitability, epithelial electrolyte transport, smooth muscle contraction, apoptosis in cell volume regulation and T-cell stimulation. Kv1.3 channels have been proposed to be crucial in the pathogenesis of multiple sclerosis and other autoimmune diseases assuming opened or closed conformation in response to the voltage difference across the membrane, the protein forms potassium-selective channel through which potassium ions may pass in accordance with their electrochemical gradient.

Recombinant protein sequence

His tag – factor X cleavage site-
MSGSHHHHHHSSGIEGRGRLIKHMTVVPGDHLLEPEAAGGGGGDPPQGGCGSGGGGGGCDRYEPLPPALPAAGEQDCCGERVVINISGL
RFETQLKTLCQFPETLLGDPKRRMRYFDPLRNEYFFDRNRPSFDAILYYYQSGGRIRRPVNVPIDIFSEEIRFYQLGEEAMEKFREDEGFLRE
EERPLPRRDFQRQVWLLFEYPESSGPARGIAIVSVLVILISIVIFCLETLPEFRDEKDYPASPSQDVFEAANNSTSGAPSGASSFSDPFFVVETL
CIIWFSFELLVRFFACPSKATFSRNIMNLIDIVAIIPYFITLGTELAERQGNGQQAMSLAILRVIRLVRVFRIFKLSRHSKGLQILGQTLKASMRE
LGLLIFFLFIGVILFSSAVYFAEADDPSSGFNSIPDAFWWAVVTMTTVGYGDMHPVTIGGKIVGSLCAIAGVLTIALPVPVIVSNFNYFYHRET
EGEEQAQYMHVGSCQHLSSSAEELRKARSNSTLSKSEYMVIEEGGMNHSAFPQTPFKTGNSTATCTTNNNPNSCVNIKKIFTDV

Quality analysis

Purity: Typically > 70 % as determined by SDS-Page and Coomassie Blue staining.

Purification procedure : mKv1.3 proteoliposomes are purified on a sucrose gradient. Additional purification can be performed if required

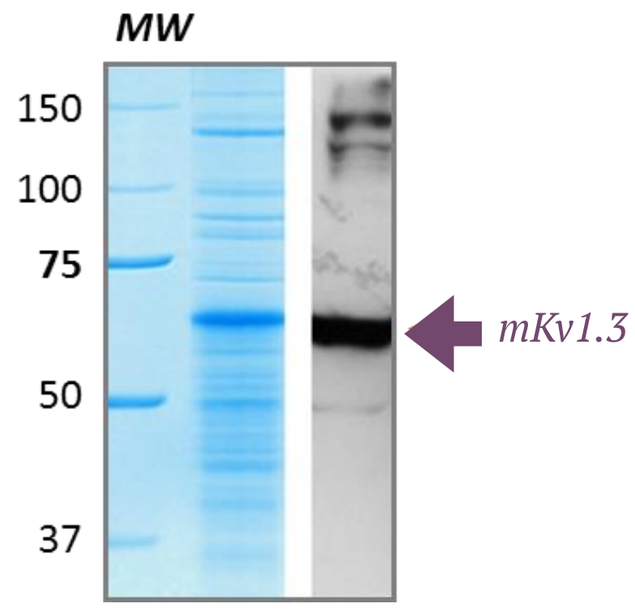


Fig.1: mKv1.3 Proteoliposomes after purification (Coomassie blue quantification and WB identification).

Assessment of the functionality

Methods:

The mouse potassium voltaged-gated channel member 3 was expressed in Synthelis's cell-free system in the presence of lipid vesicles. The functionality of the ion channel was evaluated by measurement of the potassium channel activity using a Port-a-Patch® instrument (Nanion Technlogy) in presence of the ShK know blocker toxin (from the venom of the Caribbean sea anemone *Stoichatis heliantus*, provided by Smartox Biotechnology).

Results - Potassium channel activity:

Figure 1 : Single channel recording of mKv1.3 channel. The signals were acquired after incorporation of mKv1.3 proteoliposomes into Giant Unilamellar Vesicles (GUVs) previously used to form the bilayer on the Port-A-Patch. The recordings were done at 25, 50 and 100mV (only a zoom of the recording at the 50mV is shown). The recording was done at room temperature in the presence of 200mM KCL.

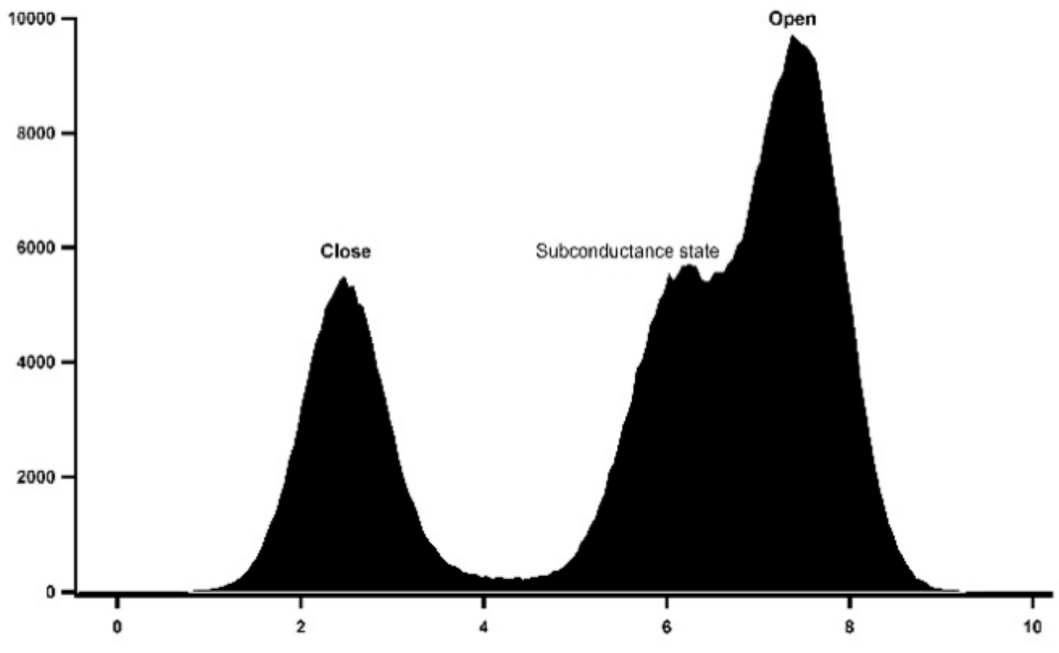


Figure 2 : Histogram of mKv1.3 activity at +50mV in absence of drugs. The conductance of mKv13 was as well calculated using all point histogram of 1800 single channel events, G=98,4±6 ps at + 50mV. The activity showed a voltage asymetry of the activation, with single channel activated for voltages higher than -25mV and reaching a high open probability at +50mV. Subconductance states are also observed.

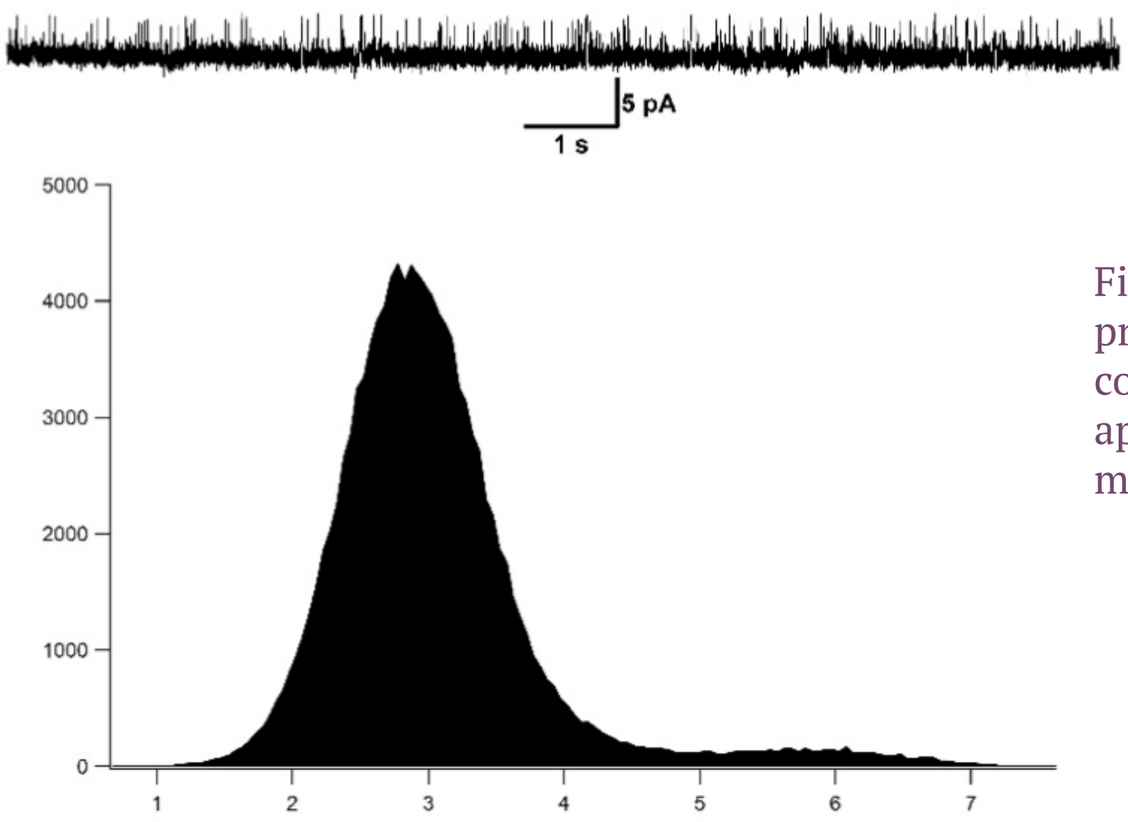


Figure 3 : Histogram pf mKv1.3 activity at +50mV in the presence of 100nM pf the ShK toxin inhibitor. The conductance of mKv13 was as well calculated at 50mV. The application of the ShK toxin at 100nM clearly blocks the mKv1.3 activity.

Formulation

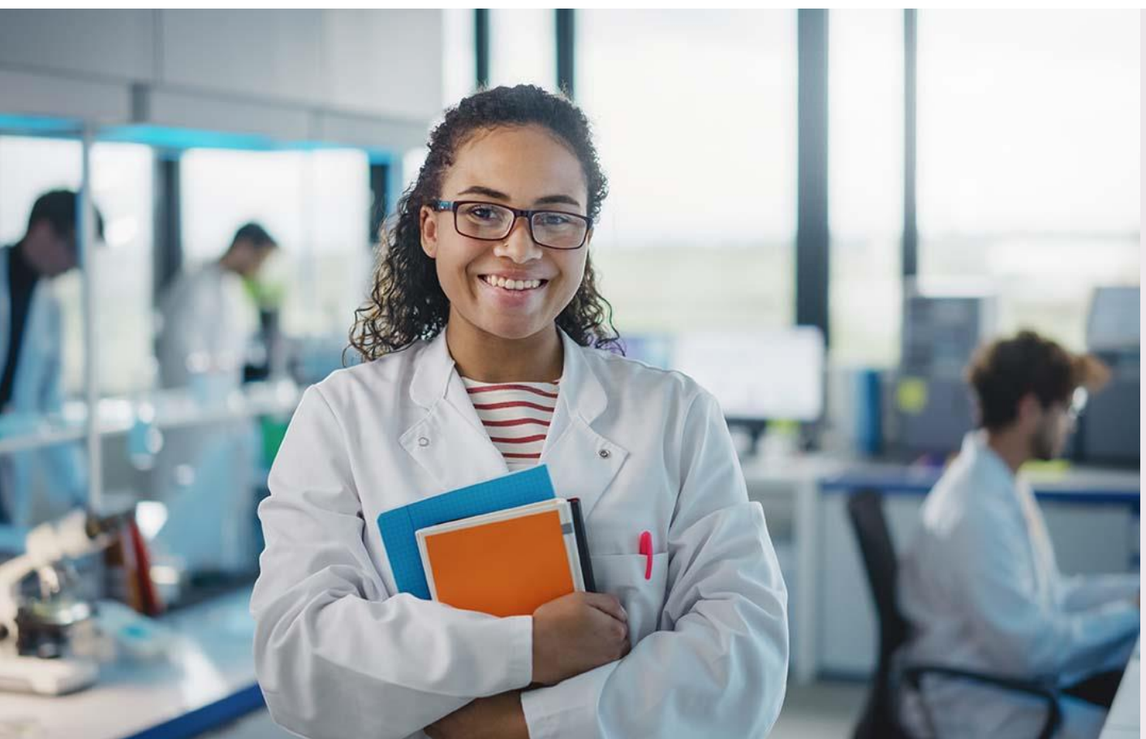
Buffer: Available in Tris 50mM, pH 7.5. Other buffers or customized formulation can be provided upon request.

Customized Hydrophobic matrix: Customized formulation with specific lipids like PEGylated or biotinylated lipids can be used upon request, as well as targeting molecules.

Storage/Stability: Store at +4°C for up to one week or several months at -80°C. Aliquot for storage.
Do not freeze-thaw after aliquoting.

Use restrictions: For life science research use only.

Available sizes: 10µg, 20µg ,100µg , 200µg, 500µg - higher quantity on request.



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