Supporting Material

Extracellular Potassium Inhibits Kv7.1 Potassium Channels by Stabilizing an Inactivated State

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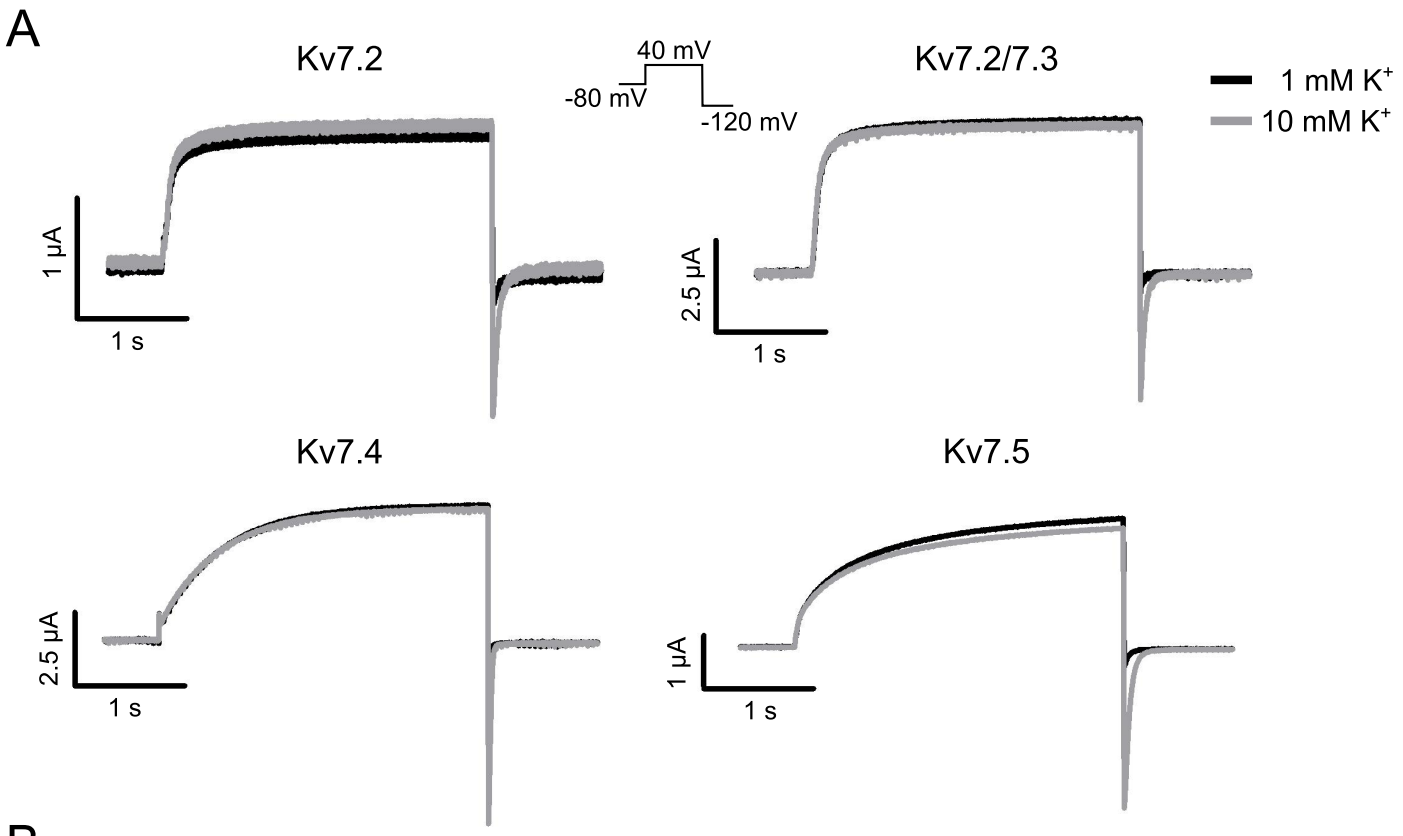
Figure legends for supporting figures

Supporting Figure S1. Response of voltage-gated potassium channels in the Kv7 family to changes in extracellular potassium. (A) Representative current traces of Kv7.2, Kv7.2/7.3, Kv7.4 and Kv7.5 channels recorded in 1 (*black*) and 10 (*grey*) mM $[K^+]_o$ as indicated. The voltage clamp protocol shown in the inset was used for all the recordings. (B) Comparison of the ratio ($I_{10\ mM}/I_{1\ mM}$) of the current amplitude measured at 40 mV in 1 and 10 mM $[K^+]_o$ to the theoretical ratio predicted by the GHK flux equation (*dashed line*). * indicates statistically significant difference compared to the predicted ratio ($p<0.05$).

Supporting Figure S2. Response of Kv7.1/KCNE2 and Kv7.1/KCNE3 channels to changes in extracellular potassium. (A) Representative current traces of Kv7.1/KCNE2 and Kv7.1/KCNE3 channels recorded in 1 (*black*) and 10 (*grey*) mM $[K^+]_o$ as indicated. (B) Comparison of the ratio ($I_{10\ mM}/I_{1\ mM}$) of the current amplitude measured at 40 mV in 1 and 10 mM $[K^+]_o$ to the theoretical ratio predicted by the GHK flux equation (*dashed line*). * indicates statistically significant difference compared to the predicted ratio ($p<0.05$).

Figure S1


A
Kv7.2
40 mV
-80 mV
-120 mV
Kv7.2/7.3
1 mM K+
10 mM K+
1 µA
1 s
2.5 µA
1 s
Kv7.4
Kv7.5
2.5 µA
1 s
1 µA
1 s

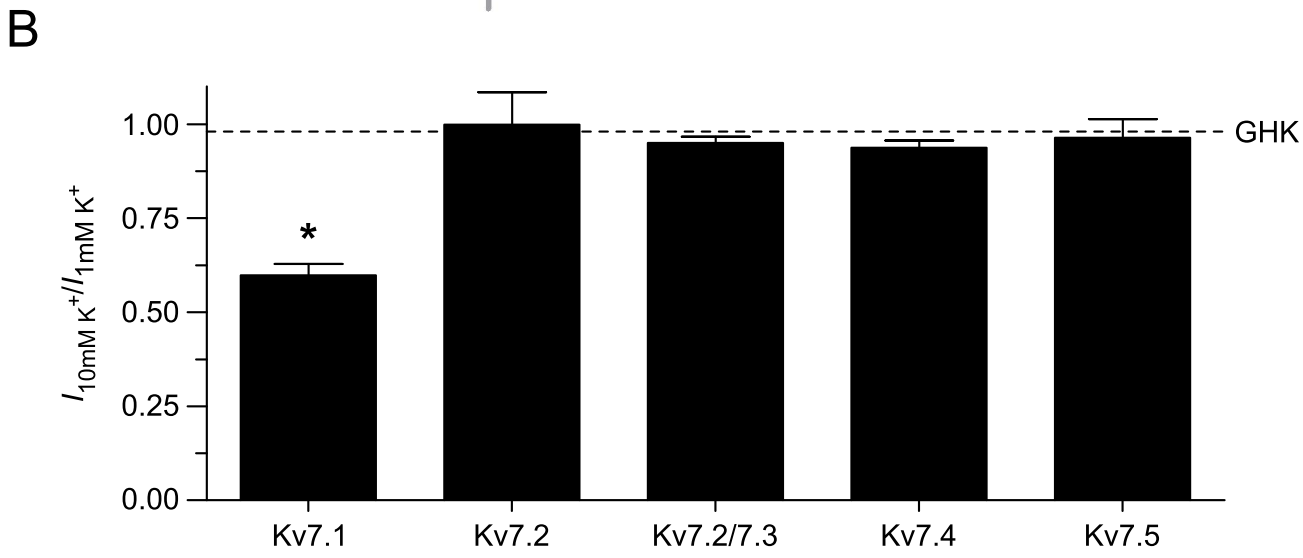
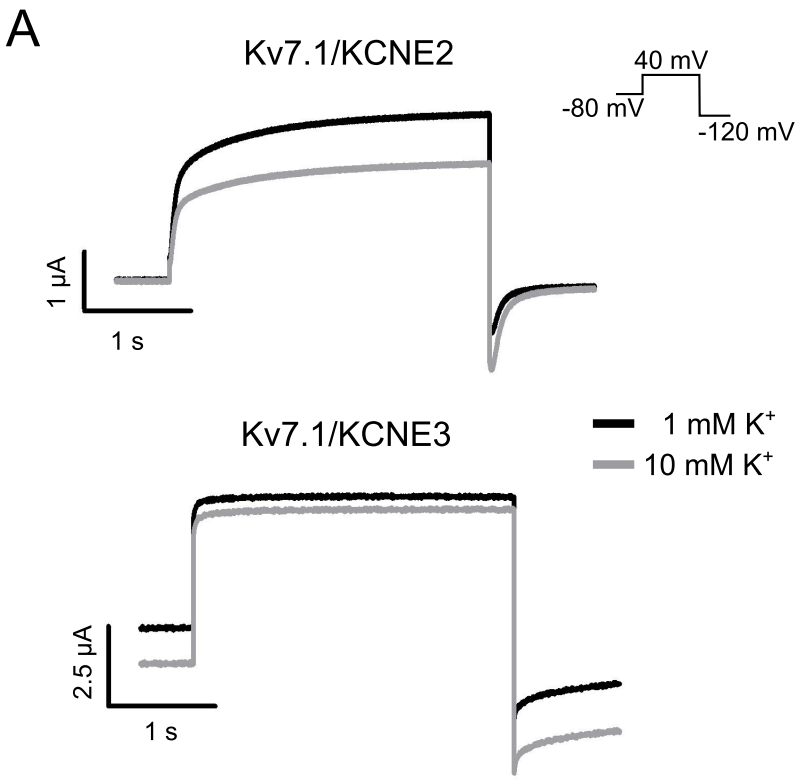
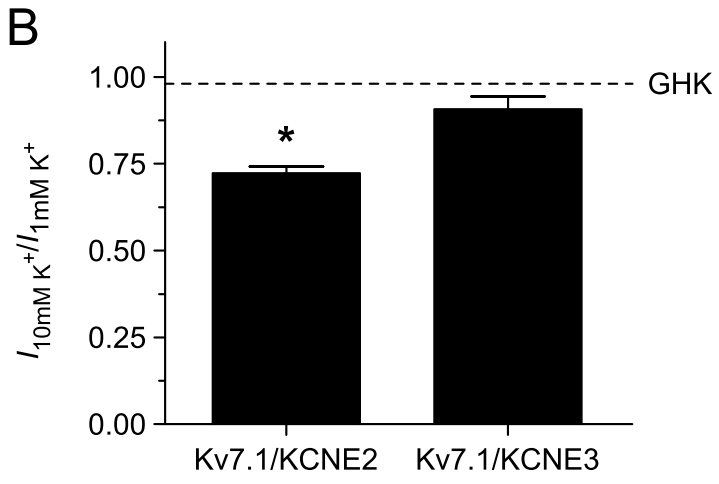

B
1.00
0.75
0.50
0.25
0.00
I10mM K+/I1mM K+
*
GHK
Kv7.1
Kv7.2
Kv7.2/7.3
Kv7.4
Kv7.5

Figure S2


A
Kv7.1/KCNE2
40 mV
-80 mV
-120 mV
1 µA
1 s
Kv7.1/KCNE3
1 mM K+
10 mM K+
2.5 µA
1 s


B
1.00
0.75
0.50
0.25
0.00
GHK
*
I10mM K+/I1mM K+
Kv7.1/KCNE2
Kv7.1/KCNE3