

Heme Inhibits Mammalian BK Channels

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The mammalian BK channels (large conductance, calcium-activated potassium channels) restrict calcium influx and excitability, and they are involved in many biologically important processes, such as mitochondrial homeostasis, blood pressure regulation, and cytoprotection from ischemia where heme stress may be particularly crucial. We have discovered that nanomolar levels of heme can inhibit the flow of potassium ions through these mammalian Slo1 BK channels. In addition, we have studied the interaction of heme and a 27 kDa segment of the cytoplasmic, regulatory domain of the human, hSlo1 channel that was over expressed in *E. coli*. Our experiments indicate that heme may bind to a specific CXXCH motif that is located near the calcium binding regulatory domain. Therefore heme may play an important role in the regulation of mammalian BK channels.