

Calcium-activated chloride channels and vascular smooth muscle: ANO1 know the answer?

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Arterial smooth muscle cells actively accumulate chloride ions (Cl^-) so that activation of any Cl^- channel will lead to Cl^- efflux. The ensuing membrane depolarization increases the open probability of voltage-dependent calcium channels leading to smooth muscle contraction and reduced arterial diameter. Of the different types of Cl^- channel identified the most extensively recorded in vascular smooth muscle cells is the calcium-activated chloride channel (CaCC), which for many years had no molecular identity. Since 2008 ANO1 (also termed TMEM16A) has been identified as a component of CaCCs. ANO1 is present in vascular smooth muscle and ANO1-specific blockers alter vascular tone. However, there are a number of discrepancies and variations in the ANO1 story. This talk will review the evidence for ANO1 (TMEM16A) as the molecular correlate for calcium-activated chloride channels and will highlight some of the interesting debating points in this field of research.

Techniques: Patch clamp electrophysiology, western blot, arteriography, transgenic animals

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