A ciliary K+ conductance sensitive to charibdotoxin underlies inhibitory responses in toad olfactory receptor neurons

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In olfactory neurons from Caudiverbera caudiverbera, a mixture of putrid odorants trigger an inhibitory, K+-selective current and a hyperpolarizing receptor potential. The current-voltage relation resembles that of a Ca2+-activated K+ conductance; their amplitude depends on extracellular Ca2+. 10 nM charibdotoxin, a blocker of K+-selective channels, including Ca2+-activated ones, reversibly abolished inhibitory currents and receptor potentials. Focal stimulation demonstrates that the underlying transduction mechanism is confined to the cilia. This represents the first evidence for inhibitory responses in vertebrate olfactory cells mediated by a ciliary CTX-sensitive K+ conductance, most likely a Ca2+-activated one. © 1995.