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Acid-sensing ion channels (ASICs) as pharmacological targets for neurodegenerative diseases.

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A significant drop of tissue pH or acidosis is a common feature of acute neurological conditions such as ischemic stroke, brain trauma, and epileptic seizures. Acid-sensing ion channels, or ASICs, are proton-gated cation channels widely expressed in peripheral sensory neurons and in the neurons of the central nervous system. Recent studies have demonstrated that activation of these channels by protons plays an important role in a variety of physiological and pathological processes such as nociception, mechanosensation, synaptic plasticity, and acidosis-mediated neuronal injury. This review provides an overview of the recent advance in electrophysiological, pharmacological characterization of ASICs, and their role in neurological diseases. Therapeutic potential of current available ASIC inhibitors is discussed.