

Acid-sensing ion channels (ASICs) 2 and 4.2 are expressed in the retina of the adult zebrafish

Viña E.

Parisi V.

Sánchez-Ramos C.

Cabo R.

Guerrera M.C.

Quirós L.M.

Germanà A.

Vega J.A.

García-Suárez O.

Acid-sensing ion channels (ASICs) are H⁺-gated, voltage-insensitive cation channels involved in synaptic transmission, mechanosensation and nociception. Different ASICs have been detected in the retina of mammals but it is not known whether they are expressed in adult zebrafish, a commonly used animal model to study the retina in both normal and pathological conditions. We study the expression and distribution of ASIC2 and ASIC4 in the retina of adult zebrafish and its regulation by light using PCR, in situ hybridization, western blot and immunohistochemistry. We detected mRNA encoding zASIC2 and zASIC4.2 but not zASIC4.1. ASIC2, at the mRNA or protein level, was detected in the outer nuclear layer, the outer plexiform layer, the inner plexiform layer, the retinal ganglion cell layer and the optic nerve. ASIC4 was expressed in the photoreceptors layer and to a lesser extent in the retinal ganglion cell layer. Furthermore, the expression of both ASIC2 and ASIC4.2 was down-regulated by light and darkness. These results are the first demonstration that ASIC2 and ASIC4 are expressed in the adult zebrafish retina and suggest that zebrafish could be used as a model organism for studying retinal pathologies involving ASICs. © 2015, Springer-Verlag Berlin Heidelberg.

Acid-sensing ion channels

Light

Retina

Zebrafish

acid sensing ion channel

eye protein

zebrafish protein

animal

biosynthesis

cytology

gene expression regulation

metabolism

physiology

retina

zebra fish

Acid Sensing Ion Channels

Animals

Eye Proteins

Gene Expression Regulation

Retina

Zebrafish

Zebrafish Proteins