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Biochemical and Biophysical Research Communications

Volume 374, Issue 1, 12 September 2008, Pages 143-146

Characterization of isolated ventricular myocytes from adult zebrafish (*Danio rerio*)

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<https://doi.org/10.1016/j.bbrc.2008.06.109>

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Abstract

The zebrafish is widely used for human related disease studies. Surprisingly, there is no information about the electrical activity of single myocytes freshly isolated from adult zebrafish ventricle. In this study, we present an enzymatic method to isolate ventricular myocytes from zebrafish heart that yield a large number of calcium tolerant cells. Ventricular myocytes from zebrafish were imaged using light and confocal microscopy. Myocytes were mostly rod shaped and responded by vigorous contraction to field electrical stimulation. Whole cell configuration of the patch clamp technique was used to record electrophysiological characteristics of myocytes. Action potentials present a long duration and a plateau phase and action potential duration decreases when increasing stimulation frequency (as observed in larger mammals). Together these results indicate

that zebrafish is a species ideally suited for investigation of ion channels related mutation screening of cardiac alteration important in human.



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Keywords

Heart; Cardiac myocytes; Ion channels; Zebrafish; Enzymatic isolation

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¹ These authors contributed equally to this study.

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