

综述

小鼠心房肌瘤AT-1细胞在心脏电生理学和药理学研究中的应用

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摘要 小鼠心房肌瘤细胞(AT-1)系从转基因小鼠体内分化出来的一种心肌样细胞。AT-1细胞具有许多其他动物心脏细胞的典型特征,例如自发性搏动,多种离子通道和对许多药物起反应等。AT-1细胞上的主要离子通道包括钠,钙和钾通道。钠通道对阻滞剂河豚毒高度敏感。L型和T型钙通道对典型的阻滞剂起反应。AT-1细胞上的一种重要外向钾电流是快速激活型迟缓整流外向钾电流(I_{Kr})。 I_{Kr} 是AT-1细胞上主要的时间依赖性复极化钾电流。研究证明,AT-1细胞可作为心脏电生理学和药理学研究中的一种非常有用的工具。迄今为止,在AT-1细胞上已经测试了许多心脏作用和非心脏作用药物的 I_{Kr} 阻滞作用。 I_{Kr} 阻滞药的一种严重副作用是可引起致死性的尖端扭转型室性心动过速。

关键词 [心肌](#) [细胞](#), [AT-1](#) [离子通道](#) [动作电位](#) [药物研究](#)

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Mouse atrial tumor myocytes AT-1 in cardiac electrophysiologic and pharmacologic studies

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Abstract

Atrial tumor myocytes (AT-1 cells) were derived from tumor-bearing mice in which SV40 T large antigen drives atrial natriuretic promoter. AT-1 cells possess many features typically seen in cardiac cells from other species, such as spontaneous beating, multiple ion channels and responses to drugs, etc. Major ion channels are present in AT-1 cells: sodium, calcium and potassium channels. Sodium channel in AT-1 cells is highly sensitive to blocker tetrodotoxin. L- and T-type calcium channels respond to classical blockers. An important outward potassium current in AT-1 cells is the rapidly-activating delayed rectifier (I_{Kr}). I_{Kr} is the sole time-dependently repolarizing potassium current in AT-1 cells. AT-1 cells are a very useful tool for studies in cardiac electrophysiology and pharmacology. As yet, a great number of cardiac and non-cardiac drugs have been tested for their I_{Kr} blocking actions in AT-1 cells. The polymorphic ventricular arrhythmia (torsade de pointes) is a severe side effect of I_{Kr} blockers.

Key words [myocardium](#) [cells](#) [AT-1](#) [ion channels](#) [action potentials](#) [drug studies](#)

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