药学学报 2004, 39(11) 887-891 DOI: ISSN: CN:

论文

M_3受体对体外H_2O_2诱导大鼠心肌细胞凋亡的保护作用

刘艳;孙宏丽;吴红;高彦辉;李呼伦;杨宝峰

哈尔滨医科大学 1. 药理教研室， 黑龙江省生物医药重点实验室-省部共建国家重点实验室培育基地, 2. 克山病研究所， 3. 神经生物教研室， 黑龙江 哈尔滨150086

摘要：

目的探讨M_3受体激动对H_2O_2诱导的大鼠培养心肌细胞凋亡的作用，进一步阐明其机制。方法末端标记法(TUNEL)进行细胞凋亡检测；免疫组化方法检测Bcl-2和Fas的表达；共聚焦显微镜观察$[Ca^{2+}]_i$荧光强度变化。结果M_3受体激动剂胆碱(10 mmol·L^{-1})可减少H_2O_2诱导的心肌细胞凋亡的数量，并可增加心肌Bcl-2的表达，减少Fas表达，抑制H_2O_2诱导的$[Ca^{2+}]_i$荧光强度的升高。但预先应用4DAMP (10 nmol·L^{-1})阻断M_3受体可逆转胆碱作用。结论激动M_3受体对H_2O_2诱导的心肌细胞凋亡有保护作用，其机制可能与Bcl-2和Fas表达以及下调$[Ca^{2+}]_i$有关。

关键词： M_3受体 细胞凋亡 培养的心肌细胞 过氧化氢 原位缺口末端标记 共聚焦显微镜 钙

Protective effect of M_3 receptor on H_2O_2-induced apoptosis of rat myocardial cells *in vitro*

LIU Yan; SUN Hong-li; WU Hong; GAO Yan-hui; LI Hu-lun; YANG Bao-feng

Abstract:

AimTo observe the effect of activation of M_3 receptor on H_2O_2 induced apoptosis in cultured rat myocytes and to investigate its possible mechanisms. MethodsIsolated neonatal cardiomyocytes were cultured. Morphologic changes were observed by microscopy. The apoptosis in cardiomyocyte was detected by terminal deoxynucleotide transferase directed d-UTP nick and end labeling (TUNEL) assay. The expression of apoptosis-related protein in Bcl-2 and Fas was measured by immunohistochemistry assay. $[Ca^{2+}]_i$ in single cardiomyocyte loaded with Fluo 3-AM was measured by confocal microscope. ResultsH_2O_2-mediated myocyte apoptosis was attenuated by M_3 receptor agonist choline (10 mmol·L^{-1}). Pretreatment of cardiac myocytes with choline also increased Bcl-2, decreased Fas expression, and inhibited the increase in FI value of $[Ca^{2+}]_i$ in H_2O_2-stimulated cardiac myocytes. However, blockade of M_3 receptor by 4DAMP (10 nmol·L^{-1}) completely inhibited the effects of choline on H_2O_2-stimulated cardiac myocytes. ConclusionActivation of M_3 receptor showed protective effect on H_2O_2-induced apoptosis in cultured rat myocytes and this effect might be related to modulating the expression of some genes including Bcl-2 and Fas as well as the downregulation of $[Ca^{2+}]_i$.

Keywords: apoptosis cultured myocyte hydrogen peroxide *in situ* nick-end labeling confocal microscope calcium M_3 receptor

收稿日期 2003-12-08 修回日期 网络版发布日期

DOI:

基金项目:

通讯作者: YANG Bao-feng

作者简介:

参考文献：

本刊中的类似文章

1．岳朋;吕延杰;杨宝峰.心脏M_3受体作为抗心律失常药物新靶点研究的进展[J]. 药学学报, 2006,41(8): 702-705

2．肖静;岳朋;王莹;张勇;霍蓉;王宁;林道红;吕延杰;杨宝峰.白藜芦醇能够修复离体缺血再灌注损伤大鼠心脏M_3受体与间隙连接蛋白43间结构及功能性整合[J]. 药学学报, 2007,42(1): 19-25

3．张高小;潘国聘;孙丽华;张艳丽;杨宝峰;王玲.M_3受体在脑心综合征心律失常中的作用[J]. 药学学报, 2008,43(8): 806-810

4．刘艳;荆玉红;孙宏丽;李呼伦;杨宝峰.M_3受体与大鼠缺血性心肌细胞凋亡关系的研究M_3受体与大鼠缺血性心肌细胞凋亡关系的研究[J]. 药学学报, 2004,39(5): 338-341

5．刘艳;许超千;焦军东;王慧珍;董德利;杨宝峰.抗心律失常药物作用的新靶点M_3R/IK_{M_3}[J]. 药学学报, 2005,40(1): 8-8

文章评论 (请注意:本站实行文责自负, 请不要发表与学术无关的内容!评论内容不代表本站观点.)

反馈人		邮箱地址	
反馈标题		验证码	7812