药学学报 2002, 37(8) 621-625 DOI: ISSN: CN:

论文

苯并吡喃-4-腙类化合物的合成及其血管舒张活性

赵圣印;黄文龙;张惠斌

中国药科大学新药研究中心, 江苏 南京 210009

摘要:

目的寻找高效低毒并具有组织选择性的苯并吡喃类钾通道开放剂。方法以对氰基苯酚为原料,经酰化、Fries重排、环合、成腙和取代等反应合成了3个系列20个苯并吡喃-4-腙类新化合物,所有目标化合物结构均经IR,*1*HNMR,MS和元素分析确证,并测定其对低钾(30 mmol·L^{-1} KCl)和高钾(80 mmol·L^{-1} KCl)诱导的大鼠主动脉条收缩抑制作用。结果合成了20个新化合物($I_{1\sim9}$,$II_{1\sim4}$和$III_{1\sim7}$)。离体扩血管活性实验表明,大部分化合物具有一定的血管舒张活性。结论化合物I_9,III_2和III_5对低钾诱导的血管收缩抑制活性在1×10^{-}6 mol·L^{-1}浓度下略低于对照药emakalim,但对高钾诱导的血管收缩抑制活性在浓度为1×10^{-}5 mol·L^{-1}下强于对照药emakalim,值得进一步研究。

关键词: 苯并吡喃 钾通道开放剂 合成 血管舒张活性

SYNTHESIS AND VASORELAXANT ACTIVITIES OF BENZOPYRAN-4-ONE HYDRAZONE DERIVATIVES

ZHAO Sheng-yin; HUANG Wen-long; ZHANG Hui-bin

Abstract:

AIMIn search of more potent, less toxic and selective potassium channel openers. METHODS According to the structure-activity relationships of benzopyran compounds and the features of structures of aprikalim, dofetilide and nifekalant, twenty benzopyran-4-one hydrazone derivatives have been designed and synthesized from 4-cyanophenos through acetylation, Fries rearragment, cyclization, hydrazone, substitution reaction and so on. The compounds were tested for their vasorelaxant activity in low (30 mmol·L^{-1}) and high (80 mmol·L^{-1}) KCl-induced contraction of rat aorta to identify potential potassium channel openers *in vitro*. RESULTSThree series of twenty benzopyran-4-one hydrazone derivatives, nominated *N*-aminoacetyl-(6-cyano-3,4-dihydrospiro ［2H-1-benzopyran -2,1′-cyclohexane］-4)-one hydrazone (I), 2-(6-cyano-3,4-dihydro-2H-1-benzopyran-4-ylene) hydrazinethiocarboxamide derivatives (II) and *N*-(2-arylethyl) aminoacetyl-(6-cyano-3,4-dihydro-2H-1-benzopyran)-4-one hydrazone (III), have been synthesized. They ($I_{1\sim9}$, $II_{1\sim4}$ and $III_{1\sim7}$) are new compounds. Their chemical structures were determined by IR, 1HNMR, MS and elemental analysis. The vasorelaxant effects of those novel compounds indicated that some of the compounds have vasorelaxant activities at 1×10^{-}6 mol·L^{-1}. CONCLUSIONThe vasorelaxant activities of compounds I9, III_2 and III_5 in inhibiting low KCl-induced vasocontraction at 1×10^{-}6 mol·L^{-1} are less potent than the reference compound emakalim. However they are more potent than emakalim to inhibition high concentration KCl-induced vasocontraction at 1×10^{-}5 mol·L^{-1} .It is worthy of further study.

Keywords: potassium channel opener synthesis vasorelaxant activity benzopyran

收稿日期 2001-10-30 修回日期 网络版发布日期

DOI:

基金项目:

通讯作者: 黄文龙

作者简介:

参考文献:

本刊中的类似文章

1. 汤磊;杨玉社;嵇汝运.苯并吡喃类化合物的合成及生物活性研究[J]. 药学学报, 2008,43(2): 162-168

2．季小慎;梁晓天;.2,3-苯并吡喃酮类化合物的合成及药理活性 [J]. 药学学报, 1998,33(1): 72-74
3．曾玲晖;张纬萍;王仁定;王苹丽;魏尔清.白三烯拮抗剂ONO-1078对小鼠局灶性脑缺血的保护作用[J]. 药学学报, 2001,36(2): 148-150
4．魏尔清;王瑶尘;陈丽萍;唐法娣;卞如濂.白细胞三烯拮抗剂ONO-1078对豚鼠迷走神经电刺激引起气道痉挛及微血管渗漏作用[J]. 药学学报, 1994,29(7): 487-491

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	6466