

论著

BRL-37344对心力衰竭大鼠 β 肾上腺素受体表达水平的影响

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摘要 目的 探讨 β_3 肾上腺素受体(β_3 -AR)及其激动剂BRL-37344(BRL)在心力衰竭中的作用。方法 大鼠分为对照组、异丙肾上腺素(Iso)组和Iso+BRL组。Iso组和Iso+BRL组大鼠间隔24 h, sc Iso 340 mg \cdot kg $^{-1}$ 2次制作心力衰竭模型。8周后, Iso+BRL组大鼠从尾静脉给予BRL 0.4 nmol \cdot kg $^{-1}$ \cdot min $^{-1}$, 10 min, 每周2次, 给药2或6周。分别于给Iso后10或14周测定死亡率、血流动力学、左室重/体重、心肌组织 β_1 -、 β_2 -和 β_3 -AR mRNA水平。结果 14周时对照组、Iso组和Iso+BRL组分别死亡0/20, 3/18和5/22($P>0.05$)。Iso使左室收缩末压、 $\pm dp/dt_{max}$ 明显降低, 左室等容舒张时间常数、左室舒张末压明显增高, 左室重/体重明显增加; 与Iso组比, Iso+BRL组的心脏舒缩功能进一步下降, 左室重/体重进一步增加。Iso组 β_1 -AR mRNA水平降低, β_3 -AR mRNA水平升高, 与Iso组比较, Iso+BRL组 β_1 -AR mRNA水平更低, β_3 -AR mRNA水平更高。 β_2 -AR mRNA 3组均有下降趋势, 但无统计学差异。结论 衰竭心脏 β_1 -AR水平下降及 β_3 -AR水平增高可导致心功能降低。 β_3 -AR mRNA水平在衰竭心脏比非衰竭心脏明显增高, 应用 β_3 -AR激动剂可明显加重心力衰竭。

关键词 [受体, 肾上腺素, \$\beta\$ RNA, 信使](#) [心力衰竭](#) [异丙肾上腺素](#) [BRL-37344](#)

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Effects of BRL-37344 on expression of β -adrenoreceptors mRNA of rats with heart failure

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Abstract

AIM To investigate the influence of β_3 -adrenoreceptor(β_3 -AR) and the effect of β_3 -AR agonist on the failing hearts.

METHODS Rats were randomly divided into control group, isoprenaline(Iso) group and Iso+BRL group. Iso group and Iso+BRL group received two sc injections of Iso (340 mg \cdot kg $^{-1}$) with a 24 h interval to induce heart failure. After 8 weeks, Iso+BRL group was given BRL-37344 0.4 nmol \cdot kg $^{-1}$ \cdot min $^{-1}$ via tail vein for 10 min, twice a week for 2 or 6 weeks. Mortality, hemodynamics, ratio of left ventricle weight and body weigh (LVW/BW) and levels of β_1 -, β_2 - and β_3 -AR mRNA were measured at the tenth and the fourteenth week after injection of Iso. **RESULTS** There was no significant difference in the mortality among the three groups($P>0.05$). Left ventricular end systolic pressure (LVESP), $\pm dp/dt_{max}$ decreased, and left ventricular end diastolic pressure (LVEDP), LVW/BW increased dramatically in Iso group. When compared with Iso hearts, Iso+BRL group had more deteriorated cardiac functions and higher LVW/BW. The level of β_1 -AR mRNA was low and the level of β_3 -AR mRNA was high in Iso group. When compared with Iso hearts, Iso+BRL group had lower level of β_1 -AR mRNA and higher level of β_3 -AR mRNA. The level of β_2 -AR mRNA had no significant difference among three groups. **CONCLUSION** In failing hearts, reduction in β_1 -AR mRNA and increase in β_3 -AR mRNA might contribute to cardiac dysfunctions; the level of β_3 -AR mRNA is higher than that in control heart; β_3 -AR agonist aggravates cardiac dysfunctions.

Key words [receptors](#) [adrenergic](#) [\$\beta\$ RNA](#) [messenger](#) [heart failure](#) [isoprenaline](#) [BRL-37344](#)

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