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论文

前胡香豆素对肾型高血压大鼠左室肥厚及心肌胞内钙、Na^+,K^+-ATP酶和Ca^{2+},Mg^{2+}-ATP酶活性的影响

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摘要:

目的研究前胡香豆素组分对肾型高血压左室肥厚的预防和逆转作用及机制。方法用两肾一夹肾型高血压左室肥厚大鼠(RHR)模型,测定前胡香豆素组分对其血压、左室湿重、心肌细胞面积、胞内静息钙及胞膜和线粒体ATP酶活性的影响。结果前胡香豆素组分(30 $mg·kg^{-1}·d^{-1}$,ig)预防组及逆转组大鼠血压、左室湿重/体重均较肥厚组明显降低;左室心肌细胞面积、胞内静息钙均较肥厚组降低;对KCl致钙浓度升高亦明显低于肥厚组;两组均可增加心肌细胞膜及线粒体Na^+,K^+-ATP酶和Ca^{2+},Mg^{2+}-ATP酶活性。结论前胡香豆素组分可预防及逆转RHR左室肥厚,减少心肌细胞内钙含量,增加ATP酶活性。

关键词: 前胡香豆素 高血压 Na^+,K^+-ATP酶 a^{2+},Mg^{2+}-ATP酶

EFFECT OF PRAERUPTORUM CAUMARIN ON CARDIAC MASS, MYOCARDIAL ［Ca^{2+}］i AND Na^+, K^+-ATPase, Ca^{2+}, Mg^{2+}-ATPase ACTIVITY IN RENOVASCULAR HYPERTENSIVE RATS

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Abstract:

AIM To investigate the preventive and reversional effect of praeruptorum caumarin compound on left ventricular hypertrophy in renovascular hypertensive rats (RHR) and its mechanism. METHODS The two-kidney-one-clip (2K1C) RHR model was used. The blood pressure, wet weight of the left ventricle, surface area of myocardial cells, resting ［Ca^{2+}］i level and Na^+, K^+-ATPase, Ca^{2+}, Mg^{2+}-ATPase activity of myocardial membrane and mitochondria were measured. RESULTS Praeruptorum caumarin 30 $mg·kg^{-1}·d^{-1}$ was given ig for 9 weeks from the 6th or 9th week after operation in the preventive or regressive group. The blood pressure, left ventricle wet weight and area of myocardial cells of the preventive and regressive group were significantly reduced than that of the LVH group. The resting ［Ca^{2+}］i of the both praeruptorum caumarin treated groups (121±13, 133±9 $nmol·L^{-1}$) were lower than that of the LVH group (158±7 $nmol·L^{-1}$). The KCl-induced ［Ca^{2+}］i elevation was decreased more significantly in preventive and regressive group than that of the hypertrophic myocytes. The activity of Na^+, K^+-ATPase and Ca^{2+}, Mg^{2+}-ATPase increased by 40% and 93% in the preventive group, 28.4% and 48.8% in regressive group than that of the LVH group. CONCLUSION Praeruptorum caumarin was shown to prevent and reverse hypertrophy of LVH by lowering ［Ca^{2+}］i and inceasing the ATPase activity.

Keywords: hypertension Na^+, K^+-ATPase Ca^{2+}, Mg^{2+}-ATPase praeruptorum caumarin

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