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论著

白藜芦醇对家兔窦房结起搏细胞的电生理效应

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摘要 目的 为探讨白藜芦醇是否能成为抗心律失常药，研究了其对窦房结起搏细胞的电生理效应。方法 应用细胞内微电极方法记录家兔窦房结起搏细胞的动作电位。结果 白藜芦醇(30～120 μmol·L^{-1})显著降低窦房结起搏细胞的动作电位幅度、零相最大上升速率(V_{max})、舒张期除极速率和起搏放电频率。而对最大舒张期电位和90%复极化的时间无明显作用。预先应用L型钙通道开放剂Bay-K-8644（0.5 μmol·L^{-1}）灌流窦房结10 min可阻断白藜芦醇（60 μmol·L^{-1}）对起搏细胞的上述电生理效应。而应用超极化激活电流阻断剂氯化铯（2 mmol·L^{-1}）加钾通道阻断剂四乙铵（20 mmol·L^{-1}）或应用一氧化氮(NO)合酶阻断剂*L*-NAME(0.5 mmol·L^{-1})灌流窦房结标本10 min对白藜芦醇（60 μmol·L^{-1}）的电生理效应没有明显影响。结论 白藜芦醇能抑制家兔窦房结起搏细胞的自发活动，此效应可能与其通过非NO依赖性途径抑制钙离子内流有关。

关键词 白藜芦醇 窦房结 钙通道 动作电位 微电极
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Electrophysiological effect of resveratrol on pacemaker cells in sinoatrial node of rabbits

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Abstract

AIM In order to investigate whether resveratrol can be used as a kind of antiarrhythmic drug, the electrophysiological effect of resveratrol on pacemaker cells in sinoatrial node was studied. **METHODS** Using intracellular microelectrode technique to record the action potential of pacemaker cells in sinoatrial node of rabbits. **RESULTS** Resveratrol (30－120 μmol·L^{-1}) significantly decreased amplitude of action potential, maximal rate of depolarization (V_{max}), velocity of diastolic (phase 4) depolarization and rate of pacemaker firing, but did not affect maximal diastolic potential and duration of 90% repolarization of action potential. Pretreatment with L-type calcium channel agonist Bay-K-8644 (0.5 μmol·L^{-1}) 10 min antagonized the effect of resveratrol (60 μmol·L^{-1}). While applying cesium chloride (2 mmol·L^{-1}), a hyperpolarization-activated current blocker, adding tetraethylammonium chloride (20 mmol·L^{-1}), a potassium channel antagonist, or applying *L*-NAME (0.5 mmol·L^{-1}), a NO synthase inhibitor, had no significantly influence on the electrophysiological effects of resveratrol. **CONCLUSION** Resveratrol exerts inhibitory electrophysiological effects on pacemaker cells in sinoatrial node of rabbits, which may be due to reduction in calcium influx *via* a NO-independent manner.

Key words resveratrol sinoatrial node calcium channels action potentials microelectrodes

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