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论著

梓醇对鱼藤酮致小鼠中脑和纹状体线粒体酶活性改变的改善作用

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摘要 目的 研究梓醇对鱼藤酮致小鼠脑组织线粒体酶活性的影响。方法 昆明小鼠分别ip给予梓醇10 mg·kg^{-1}, 连续7 d后, 改ip给予鱼藤酮1.5 mg·kg^{-1}, 连续28 d;或ip给予鱼藤酮1.5 mg·kg^{-1}, 连续28 d后, 改ip给予梓醇10 mg·kg^{-1}, 连续7 d。取小鼠中脑和纹状体提取线粒体测定线粒体复合物酶Ⅰ、Ⅱ、Ⅱ+Ⅲ、Ⅳ、线粒体一氧化氮合酶(mtNOS)活性、线粒体膜电位以及线粒体内活性氧(ROS)。结果 与正常对照组相比, 鱼藤酮组中脑和纹状体线粒体复合物Ⅰ和Ⅳ活性明显下降(P<0.01), 预防或治疗性地给予梓醇后活性明显上升(P<0.05);线粒体复合物Ⅱ和Ⅱ+Ⅲ活性各组间无明显差异。与正常组相比, 鱼藤酮组小鼠中脑和纹状体线粒体膜电位下降(P<0.01), mtNOS活性升高(P<0.05), ROS的生成增多(P<0.05), 预防或治疗性地给予梓醇后中脑和纹状体线粒体膜电位升高(P<0.01), mtNOS活性降低(P<0.05), ROS的生成减少(P<0.05)。结论 梓醇可能通过恢复脑内线粒体复合物酶活性和膜电位水平、减少线粒体内ROS生成的作用而抑制鱼藤酮诱导的脑损伤。

关键词 梓醇 鱼藤酮 线粒体

分类号 R963

Improving effect of catalpol on changes of mitochondrial respiratory chain activity in mice induced by rotenone

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Abstract

OBJECTIVE To investigate the effect of catalpol on the activities of mitochondrial enzyme complex in mouse brain induced by rotenone. METHODS Kunming mice were intraperitoneally injected with catalpol 10 mg·kg^{-1} for 7 d and then with rotenone 1.5 mg·kg^{-1} for 28 d, or the mice were intraperitoneally injected with rotenone 1.5 mg·kg^{-1} for 28 d and then with catalpol 10 mg·kg^{-1} for 7 d. The striatum and mesencephalon were isolated and the activity of mitochondrial enzyme complexes Ⅰ, Ⅱ, Ⅱ+Ⅲ, Ⅳ, mitochondrial nitric oxide synthase (mtNOS), mitochondrial membrane potential and reactive oxygen species (ROS) in the brain of mice were measured, respectively. RESULTS Compared with the normal group, the activity of complex Ⅰ, Ⅳ in the brain was significantly lower (P<0.01) in model group. The activity of complex Ⅰ, Ⅳ in the brain was significantly higher in therapy and prevention group while the activity of complex Ⅱ and Ⅱ+Ⅲ had no obvious change in each group. In model group, mitochondrial membrane potential (P<0.01) was lower while mtNOS activity (P<0.05) and the production of ROS (P<0.05) was higher as compared with normal group. In therapy and prevention group, mitochondrial membrane potential increased (P<0.01) while mtNOS activity (P<0.05) and the production of ROS (P<0.05) decreased compared with normal group. CONCLUSION Catalpol can inhibit the brain damage induced by rotenone by recovering the respiratory complex activities and membrane potential level, reducing ROS production and inhibiting NOS activity.

Key words catalpol rotenone mitochondria

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