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论文

α-青心酮对损伤的脑线粒体Na^+,K^+-ATPase活性和脑细胞耗氧的作用

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摘要：

目的研究*α*-青心酮对抗坏血酸和硫酸亚铁诱导脑线粒体Na^+，K^+-ATPase活性和脑细胞耗氧的作用。方法采用无机磷法测定Na^+，K^+-ATPase活性,分光光度法检测脑线粒体膨胀和脂质过氧化物，氧电极法测定脑细胞耗氧量。结果在抗坏血酸和硫酸亚铁的作用下，鼠脑线粒体Na^+，K^+-ATPase活性降低，线粒体膨胀和脑细胞脂质过氧化物升高。*α*-青心酮抑制其抗坏血酸和硫酸亚铁诱导脑线粒体和细胞的损伤,增加Na^+，K^+-ATPase活性，降低脑线粒体膨胀和脑细胞脂质过氧化物生成。*α*-青心酮还具有减少ADP刺激的脑细胞耗氧的作用。结论*α*-青心酮通过清除自由基和抗氧化作用保护脑细胞结构和功能的完整。

关键词： *α*-青心酮 Na^+，K^+-ATP酶 线粒体膨胀 脂质过氧化物 耗氧量

Effect of 3,4-dihydroxyacetophenone on Na^+,K^+-ATPase activity of injured mitochondria and the oxygen consumption of brain cells of rat

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Abstract:

AimTo investigate the effect of 3,4-dihydroxyacetophenone (*α*-DHAP) on Na^+,K^+-ATPase activity of injured brain mitochondria induced by ascorbate-$FeSO_4$ and the oxygen consumption of rat brain cells stimulated by ADP. MethodsNa^+,K^+-ATPase activity was determined according to the method of inorganic phosphate. Swelling of the brain mitochondria was detected with the method of spectrophotometer. Lipid peroxidation was detected according to the thiobarbituric acid method of spectrophotometer. Oxygen consumption was measured by oxygen electrode method. ResultsThe decrease of Na^+,K^+-ATPase activity, mitochondria swelling and formation of lipid peroxidation were shown in rat brain mitochondria and cells induced by ascorbate-$FeSO_4$. *α*-DHAP was shown to increase the activity of Na^+,K^+-ATPase, decrease the mitochondria swelling and inhibit the production of lipid peroxidation of brain mitochondria and cells induced by ascorbate and $FeSO_4$. *α*-DHAP can also reduce the oxygen consumption of brain cells stimulated by ADP. Conclusion*α*-DHAP can protect the structure and the function of brain mitochondria and cells by scavenging the free radical and resisting the reaction of lipid peroxidation.

Keywords: Na^+,K^+-ATPase mitochondria swelling lipid peroxidation oxygen consumption 3,4-dihydroxyacetophenone

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