

论文

Ebselen对自由基诱发的皮层神经元和皮层线粒体脂质过氧化损伤的保护作用

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摘要:

观察了ebselen对超氧阴离子O^{·-}₂和羟自由基·OH诱发的体外培养大鼠皮层神经元乳酸脱氢酶(lactic dehydrogenase,LDH)释放,和TBARS(thiobarbituric acid reactive substance)含量升高及制备的皮层线粒体TBARS含量升高的影响。结果表明:超氧阴离子和羟自由基引起了培养神经元和线粒体明显的损伤。浓度在5~50μmol·L⁻¹之间,ebselen能剂量依赖性地抑制LDH释放和TBARS含量的增加,对线粒体的TBARS含量升高也有显著的抑制作用。但浓度为0.2~50μmol·L⁻¹时,药物无直接清除超氧阴离子和羟自由基的活性。因此,ebselen对氧自由基诱发的神经元脂质过氧化损伤有拮抗作用,这种作用与直接清除自由基无关。

关键词: bselen 抗氧化活性 皮层神经元 线粒体 氧自由基

PROTECTION OF EBSELEN ON OXYGEN FREE RADICAL-INDUCED LIPID PEROXIDATION DAMAGE OF CULTURED RAT CORTICAL NEURON AND CORTICAL MITOCHONDRIA

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Abstract:

Ebselen(2-phenyl-1,2-benzisoselenanzol-3(2H) one, C₁₃H₉NOSe) is a seleno organic anti oxidant compound. In this study, the effect of ebselen on lipid peroxidation damage induced by O^{·-}₂ and ·OH *in vitro*, of cultured rat cortical neuron and cortical mitochondria was studied. When neuron was exposed to hypoxanthine/xanthine oxidase system and vitamin C/CuSO₄ system, obvious damage was detected: lactic dehydrogenase(LDH)was released and TBARS content increased. Ebselen(10,25,50 μmol·L⁻¹) reduced LDH efflux induced by O^{·-}₂ and ·OH in a dose dependent manner. As for the TBARS content, from 5 μmol·L⁻¹ to 50 μmol·L⁻¹, ebselen negated its increase, also dose-dependently. Furthermore, ebselen lowered TBARS content of cortical mitochondria treated with O^{·-}₂ and ·OH in a dose-related manner. But ebselen showed no activity of scavenging O^{·-}₂ and ·OH. This suggests that ebselen has direct anti-oxidant activity on neuron and its activity is not achieved by scavenging oxygen free radical.

Keywords: Anti-oxidant activity Cortical neuron Mitochondria Oxygen free radical Ebselen

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