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论文

(-)-*S*·*R*-蝙蝠葛苏林碱对谷氨酸引起的大鼠大脑皮质神经元损伤的保护作用

刘景根;李瑞;刘国卿;王金唏

中国药科大学药理教研室,南京210009;**南京大学配位化学国家重点实验室,南京210008;*军事医学科学院毒物药物研究所,北京100850

摘要:

用细胞培养方法,在原代培养的大鼠皮质神经细胞上,观察了(-)-*S*·*R*-蝙蝠葛苏林碱对谷氨酸引起的神经元损伤的保护作用。以Fura-2/AM为Ca^{2+}的荧光指示剂,用AR-CM-MIC阳离子测定系统观察(-)-*S*·*R*-蝙蝠葛苏林碱对谷氨酸诱发大鼠脑皮质神经细胞内Ca^{2+}升高的影响。结果表明(-)-*S*·*R*-蝙蝠葛苏林碱能剂量依赖性地抑制谷氨酸的神经毒作用,对谷氨酸诱发的神经细胞内游离Ca^{2+}升高有明显的抑制作用。提示蝙蝠葛苏林碱对缺血性脑损伤有保护作用。

关键词: 蝙蝠葛苏林碱 皮质神经元 兴奋性氨基酸 细胞内游离Ca^{2+} 细胞培养

PROTECTIVE EFFECTS OF (-)-*S*·*R*-DAURISOLINE ON NEURONAL INJURY IN RAT PRIMARY CORTICAL CULTURES

Liu Jinggen; Li Rui; Liu Guoqingand Wang Jinxi

Abstract:

The neuroprotective effects of (-)-*S*·*R*-daurisoline on glutamate-induced neurotoxicity were studied in rat primary cortical cultures. The inhibitory effects of (-)-*S*·*R*-daurisoline on glutamate-elicited free intracellular Ca^{2+} increase were also studied in freshly dissociated single brain cells isolated from new born rat using AR-CM-MIC Cation Measurement System. Our experimental results demonstrated that (-)-*S*·*R*-daurisoline could obviously inhibit the neurotoxicity induced by glutamate and significantly increased cell viability in dose dependent manner. In inhibiting glutamate induced neurotoxicity, the IC_{50} value of (-)-*S*·*R*-daurisoline was found to be 3.4μmol·L^{-1}.(-)-*S*·*R*-daurisoline was also shown to markedly inhibit glutamate elicited increase of cytosolic free Ca_{2+} concentration in dose dependent manner with IC_{50} value of 2.0 μmol·L^{-1}. Our results showed that (-)-*S*·*R*-daurisoline has an obvious protective effect on glutamate induced neurotoxicity in primary cortical cultures. The protective mechanism of (-)-*S*·*R*-daurisoline may be relevant to inhibit Ca_{2+} influx into cells via glutamate mediated ligand gated ion channels.

Keywords: Cortical neurons Excitatory amino acid Free intracellular Ca^{2+} Cell culture Daurisoline

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作者简介:

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