

论文

姜黄素对STS诱导大鼠海马神经元损伤影响

覃筱燕, 张淑萍, 杨彬, 杨晓萍, 刘涛燕

中央民族大学生命与环境科学学院, 北京 100081

摘要:

目的 探讨姜黄素对星形孢菌素(STS)诱导的大鼠海马神经元损伤的保护作用。**方法** 运用乳鼠海马神经元原代培养细胞,采用STS诱导建立神经细胞损伤模型,实验设4组,对照组、模型组、姜黄素组(20 $\mu\text{mol/L}$)和姜黄素预处理组(姜黄素和STS分别为20 $\mu\text{mol/L}$),镜下观察神经细胞形态学变化;噻唑蓝(MTT)法测定细胞活性,乳酸脱氢酶(LDH)释放率检测细胞毒性,免疫荧光染色法检测活性氧(ROS)水平;western blot检测细胞中active caspase-3、p-AKT蛋白表达。**结果** 与模型组比较,姜黄素预处理组神经细胞损伤程度明显减轻;姜黄素预处理组细胞活性(0.877 ± 0.016)较模型组(0.625 ± 0.007)升高($t=3.47, P<0.01$),LDH释放量(0.383 ± 0.025)低于模型组(0.582 ± 0.051) ($t=3.25, P<0.01$);模型组ROS阳性细胞数多于姜黄素预处理组;姜黄素预处理组active caspase-3表达量(0.951 ± 0.089)低于模型组(1.370 ± 0.131) ($t=3.64, P<0.01$),p-AKT表达量(1.107 ± 0.025)高于模型组(0.611 ± 0.002) ($t=5.85, P<0.01$)。**结论** 姜黄素通过抑制细胞ROS释放、下调active caspase-3和上调p-AKT蛋白表达发挥对STS所致大鼠海马神经元损伤的保护作用。

关键词: 姜黄素 星形孢菌素(STS) 海马神经元 active casepase-3 p-AKT

Effect of curcumin on cultured rat hippocampal neurons with STS-induced injury

QIN Xiao-yan, ZHANG Shu-ping, YANG Bin, et al

College of Life and Environmental Science, Minzu University of China, Beijing 100081, China

Abstract:

Objective To investigate the protective effect of curcumin on cultured rat hippocampal neurons with staurosporine(STS)-induced injury.**Methods** The primary neonatal rat hippocampal neurons were cultured and STS was used to induce nerve cell damage.The neurons cultured were assigned into control group,model group(20 $\mu\text{mol/L}$ of STS),curcumin group(20 $\mu\text{mol/L}$),and curcumin pretreatment group(20 $\mu\text{mol/L}$ of curcumin and STS).The change of cell morphology was observed with microscope.Survival rate of hippocampal nerve cells was determined with methyl thiazolyl tertazolium(MTT) assay and lactate dehydrogenase(LDH) release assay.The reactive oxygen species(ROS) positive-cell number was measured with immunofluorescence staining.The expressions of active caspase-3 and p-AKT were detected by western blot.**Results** The morphology damage of hippocampal neurons in curcumin pretreatment groups was slighter than that in model group.The viability of hippocampal neurons in curcumin pretreatment group was higher than in model group (0.877 ± 0.016 vs $0.625 \pm 0.007, P<0.01$).The cytotoxicity of hippocampal neurons in curcumin pretreatment group was significantly less than in model group(0.383 ± 0.025 vs $0.582 \pm 0.051, P<0.01$).ROS positive cells in model group were significantly greater than in curcumin pretreatment group.The expression of active caspase-3(Csp-3) in curcumin pretreatment group was significantly reduced compared to that in STS model group(0.951 ± 0.089 vs $1.370 \pm 0.131, P<0.01$) and the expression of p-AKT significantly increased(1.107 ± 0.025 vs $0.611 \pm 0.002, P<0.01$)in curcumin pretreatment group.**Conclusion** The protective effect of curcumin against STS-induced injury in cultured primary neonatal rat hippocampal neurons is likely through the inhibition of nerve cells,ROS release,the decrease of active caspase-3 expression,and the increase of p-AKT expression.

Keywords: curcumin STS hippocampal neurons active casepase-3 p-AKT

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