

论文

胎鼠神经干细胞培养方法的建立及药物对干细胞增殖的影响

申丽红;张均田;

中国医学科学院、中国协和医科大学 药物研究所, 北京 100050

摘要:

目的建立神经干细胞培养模型,观察药物对其增殖能力的影响。方法建立大鼠胎鼠神经干细胞的培养方法,并用MTT法和3H-胸腺嘧啶核苷参入法观察黄皮酰胺、丹酚酸A及人参皂苷Rg1等对第2代神经球细胞状态的影响。结果免疫细胞化学结果显示,培养的神经细胞具备干细胞的基本特性;MTT和液闪结果则表明,上述3种药物可不同程度地影响神经干细胞的存活率和/或增殖活性。结论本实验所建立的胚胎大鼠神经干细胞培养模型可以观察到一些有脑保护作用的药物对干细胞存活和增殖有一定影响。

关键词: 神经干细胞 增殖能力 人参皂苷Rg1 (-)-黄皮酰胺 丹酚酸A

Culture of neural stem cells from cerebral cortex of rat embryo and effects of drugs on the proliferation ability of stem cells

SHEN Li-hong; ZHANG Jun-tian

Abstract:

AimTo establish culture procedures of neural stem cells from embryonic rat brain, determine their stem-cell characteristics and observe the effects of several compounds on their proliferation ability.MethodsFirstly, a stem cell culture system was set up from embryonic rat cortex.The cells were identified as neural stem cells through immunocytochemistry, in which antibodies to neural stem cell specific protein and markers of mature neural cells were used.Then, by using MTT assay, the survival rate of neurospheres incubated with various concentrations of ginsenoside Rg1, (-)-clausenamide and salvianolic acid A were observed. Furthermore, the effect of these drugs was measured with 3 [H] thymidine incorporation assay.ResultsIn this study, a culture model of neural stem cell was successfully set up.In this model, primary cells from E16-18 rat cortex were dissected out, and cultured as floating neurospheres.The results of immunocytochemistry showed that nestin was expressed by the majority of cells within the sphere.After growing for 8 days in differentiation medium, cells from a single neurosphere were shown to differentiate into 3 main kinds of neural cells: neurons, astrocytes and oligodendrocytes.MTT assay revealed that the three drugs all enhanced the survival rate of neural stem cells, but 3 [H] thymidine incorporation assay suggested that only Rg1 significantly accelerated the proliferation rate. ConclusionOne culture model of neural stem cell was set up successfully.Meanwhile, several drugs were found to increase the proliferation and/or survival rate of neural stem cells.It has been demonstrated that neural stem cells exist in adult mammalian brains.So, these drugs may become promising candidates for the therapy of neurodegenerative diseases, such as Alzheimer's disease and Parkinson's disease.

Keywords: proliferation ability ginsenoside Rg1 (-)-clausenamide salvianolic acid A neural stem cells

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通讯作者: 张均田

作者简介:

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