

论文

糖皮质激素诱导的小鼠记忆功能低下及其作用机理

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摘要:

目的:研究糖皮质激素(GCOR)诱导小鼠记忆功能降低及其作用机理。方法:采用Fura-2/AM 钙离子荧光指示剂和双波长荧光分光光度计测定细胞内[Ca²⁺]i 浓度;用透射电镜和流式细胞仪分别检测细胞凋亡(PCD) 。结果:GCOR 可分别诱导成年及老龄小鼠机体免疫功能降低,胸腺及脾脏脏指指数减小,老龄动物记忆功能降低,胸腺、海马细胞内Ca²⁺ 超载,海马神细胞PCD细胞数增加。体外试验结果亦表明,GCOR 可直接诱导T 淋巴细胞和海马神经细胞[Ca²⁺]i 超载,细胞凋亡。结论:糖皮质激素可诱导小鼠记忆功能降低。细胞内[Ca²⁺]i 超载可能是引起小鼠免疫功能降低、智力水平下降、衰老和细胞凋亡的主要原因之一。

关键词: 糖皮质激素 细胞内钙离子 钙离子荧光指示剂Fura 2/AM 免疫功能 记忆功能 细胞凋亡

GLUCOCORTICOID INDUCED DECREASE OF INTELLIGENCE IN MICE AND ITS MECHANISM

Li Weiping; Zhang Yan; Ming Liang and Chen Minzhu

Abstract:

AIM: To study the effect of glucocorticoids(GCOR) on intelligence in mice and its mechanism. METHODS: Immunosuppression and decrease in intelligence of adult and old mice were induced by GCOR(sc, 4 mg·kg⁻¹, qd×28). Calcium fluorescence indicator Fura-2/AM was used to measure free intracellular calcium ([Ca²⁺]i). Programmed cell death(PCD) and apoptosis were measured by means of electron microscopy and flow cytometry. RESULTS: GCOR was shown to be immunosuppress and decrease intelligence as well as caused PCD of hippocampus in mature and old mice *In vivo* and *in vitro* . This increase of GCOR continued in the free intracellular calcium concentration ([Ca²⁺]i) of thymocytes and hippocampus and caused PCD of thymocytes. CONCLUSION: GCOR was shown to be immunosuppress and decrease in intelligence and PCD in thymocytes and hippocampus resulted in sustaining increase in [Ca²⁺]i which may be one of the main reasons for the decrease of immunity and intelligence of mice and the process of ageing and apoptosis.

Keywords: intelligence Fura 2 intracellular free Ca²⁺ apoptosis immunosuppression

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