

论著

银杏叶制剂对脑缺血再灌注后热休克蛋白、c-fos表达的影响

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摘要 目的: 研究银杏叶制剂对大鼠脑缺血再灌注后热休克蛋白(HSP)、c-fos表达的影响,探讨其神经保护机制。方法: 采用改良Longa法复制大鼠局灶性脑缺血再灌注模型。56只实验大鼠随机分为正常对照组、假手术组、缺血再灌注组及银杏叶制剂预处理组。银杏组大鼠在实验前灌服银杏制剂2 mL, 1日3次, 连用5 d。应用HSP70及c-fos免疫组化染色、c-fos mRNA原位杂交、原位细胞凋亡及HE染色等方法观察缺血再灌注不同时间点(1 h、6 h、12 h、24 h、3 d、7 d)两者的变化,并对其阳性结果进行半定量分析。结果: 银杏制剂预处理组各时段神经细胞缺血程度明显轻于未处理组、TUNEL阳性细胞数明显少于未处理组, HSP70及c-fos表达的阳性细胞数则明显多于未处理组(P<0.01)。脑缺血再灌注组1 h时c-fos即有表达, 6 h达高峰, 后逐渐下降。再灌注6 h组HSP70在缺血侧皮质及基底节开始表达, 24 h达高峰。再灌注6 h细胞凋亡最显著。结论: 银杏制剂可能通过诱导HSP70及c-fos的表达, 发挥其神经保护作用。

关键词 [脑缺血](#); [热休克蛋白质70](#); [基因,c-fos](#); [二裂银杏](#)

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Effect of Ginkgo biloba extract on the expression of c-fos and HSP70 following focal cerebral ischemic reperfusion in rats

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Abstract

AIM: To investigate the influence of Ginkgo biloba extract (GBE) on the expression of c-fos, heat shock protein 70 (HSP70) during focal cerebral ischemic reperfusion in rats. METHODS: The middle cerebral artery occlusion (MCAO) model described by Zea longa was used. Healthy Wistar rats were randomized to 4 groups. Immunohistochemistry, in situ hybridization and terminal deoxynucleotidyl transferase-mediated dUTP nick end labeling (TUNEL) were used to detect the expression of c-fos gene, HSP70 and cell apoptosis at different reperfusion time points: 1, 6, 12, 24 hours and 3, 7 days after recirculation. RESULTS: The positive reactions of both c-fos and HSP70 were significantly increased at different reperfusion time in GBE-pretreated ischemia/reperfusion (IR) group than those in ischemia/reperfusion group (P<0.01) and the number of TUNEL-positive cells was reduced in GBE-pretreated IR group. CONCLUSION: The GBE induced the expression of c-fos, HSP70 and contributes to neuroprotective activities after cerebral ischemia.

Key words [Brain ischemia](#) [Heat-shock proteins 70](#) [Genes](#) [c-fos](#) [Ginkgo biloba](#)

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