[1]江涌,孙晓川,陈礼刚,等.APOE基因亚型及其短肽COG1410对神经细胞损伤后早期凋亡的影响[J].第三军医大学学报,2014,36(06):548-552.

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APOE基因亚型及其短肽COG1410对神经细胞损伤后早期凋亡的

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Title: Effect of APOE alleles and apoE-mimetic peptide COG1410 on early neuron apoptosis after *in vitro* traumatic brain injury

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关键词: 载脂蛋白E; 短肽; 创伤性脑损伤; 体外模型; 早期凋亡

Keywords: apolipoprotein E; apoE-mimetic peptide; traumatic brain injury; *in vitro* model; early apoptosis

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摘要: 目的 探讨载脂蛋白E（APOE代表基因，apoE代表蛋白）亚型特异性及其短肽与早期凋亡的相关性，以期明确APOE亚型影响脑创伤病情转归及预后的病理机制。 方法 采用稳定表达人APOE各等位基因的APOE敲除鼠的神经干细胞，优化诱导分化条件，构建神经元/胶质细胞共培养体系及细胞划痕损伤模型。通过Annexin V/PI联合流式细胞技术检测损伤后各组细胞早期凋亡率，分析人APOE各等位基因及其短肽影响继发性神经细胞损伤的差异。 结果 成功构建携带人源性APOE各亚型的细胞划痕损伤模型；伤后24 h时间点各组细胞早期凋亡率较6、12 h明显增高（$P<0.05$），且人APOEε4组较其余亚型组早期凋亡率明显增高（$P<0.05$）。在伤后24 hapoE短肽COG1410可显著降低各亚型组早期凋亡率（$P<0.01$）。 结论 APOEε4携带者可能通过早期凋亡导致脑创伤急性期病情加重。而apoE短肽COG1410可通过降低早期凋亡发挥神经保护作用。

Abstract: Objective To elucidate the mechanism mediating the effects of apolipoprotein E (APOE for gene, apoE for protein) alleles and apoE-mimetic peptide COG1410 on early apoptosis in an *in vitro* model of experimental traumatic brain injury. Methods Eukaryotic expression vectors carrying individual APOE alleles (ε2, ε3, ε4) were transferred into neural stem cells (NSCs) derived from APOE knockout mice. An *in vitro* neuronal/glial co-culture model of mechanical injury was developed using a controlled scratch. Flow cytometry was performed to analyze the correlations among APOE genotypes, apoE-mimetic peptide COG1410 and early apoptosis. Results Early apoptosis after injury was observed in all groups, which was significantly higher at 24 h after injury than at 6 h and 12 h after injury ($P<0.05$). The group transfected with APOEε4 showed more significant early apoptosis 24 h after injury as compared to the groups transfected with APOEε2 or APOEε3 ($P<0.05$). Furthermore, decreases of early apoptosis were detected in the groups treated with apoE-mimetic peptide COG1410 at 24 h after injury ($P<0.01$). Conclusion APOEε4-trasfected NSCs showing a higher rate of early apoptosis indicates that the patients with APOEε4 may suffer aggravation of brain trauma in acute stage due to early apoptosis. Our results also identify the early neuroprotective effect of apoE-mimetic peptide COG1410.

参考文献/REFERENCES:

江涌，孙晓川，陈礼刚，等. APOE基因亚型及其短肽COG1410对神经细胞损伤后早期凋亡的影响[J].第三军医大学学报,2014,36(6):548-552.

相似文献/REFERENCES:

[1]周帅,蒋理,程崇杰,等.载脂蛋白E对星形胶质细胞缺氧性损伤的保护作用[J].第三军医大学学报,2012,34(20):2067.
Zhou Shuai,Jiang Li,Cheng Chongjie,et al.Apolipoprotein E protects hypoxic injuried astrocytes in vitro[J].J Third Mil Med Univ,2012,34(06):2067.

[2]郭启燕,龙友国,龙思方,等.贵州布依族人群载脂蛋白E基因多态性与血脂、载脂蛋白的关系[J].第三军医大学学报,2012,34(23):2395.
Guo Qiyan,Long Youguo,Long Sifang,et al.Relationship of apolipoprotein E polymorphism with serum lipid and apolipoprotein in Buyi ethnic minority group in Guizhou province[J].J Third Mil Med Univ,2012,34(06):2395.

[3]曾春,周帅,唐爽,等.载脂蛋白E与蛛网膜下腔出血后脑组织中内皮型一氧化氮合成酶表达的关系[J].第三军医大学学报,2013,35(07):653.
Zeng Chun,Zhou Shuai,Tang Shuang,et al.Correlation of apoE with cerebral endothelial nitric oxide synthase after sub-arachnoid hemorrh in mice[J].J Third Mil Med Univ,2013,35(06):653.

[4]吴海涛,江涌,张晓冬,等.载脂蛋白E基因多态性影响星形胶质细胞损伤后早期NF-κB表达的实验研究[J].第三军医大学学报,2010,32(02):103.
Wu Haitao,Jiang Yong,Zhang Xiaodong,et al.APOE polymorphisms affects NF-κB expression in cultured mouse astrocytes in the early stage postinjury[J].J Third Mil Med Univ,2010,32(06):103.

[5]徐秋,李生兵,杨刚毅,等.中国人群ApoE基因多态性与2型糖尿病相关性的Meta分析[J].第三军医大学学报,2010,32(02):164.
Xu Qiu,Li Shengbing,Yang Gangyi,et al.Association of ApoE gene polymorphisms and type 2 diabetes mellitus in Chinese population: a Meta analysis study[J].J Third Mil Med Univ,2010,32(06):164.

[6]印晓鸿,张晓冬,孙晓川,等.颅脑创伤在载脂蛋白E基因影响脑电活动中的诱发作用[J].第三军医大学学报,2010,32(08):846.
Yin Xiaohong,Zhang Xiaodong,Sun Xiaochuan,et al.Isoform-specific influence of APOE induced by traumatic brain injury on the electrical activity of brain[J].J Third Mil Med Univ,2010,32(06):846.

[7]殷成,蒋理,周帅,等.载脂蛋白E亚型通过细胞外信号调节激酶途径影响轴突生长锥的生长[J].第三军医大学学报,2012,34(08):744.
Yin Cheng,Jiang Li,Zhou Shuai,et al.ApoE4 influences growth cone of neuronal axon through ERK signal pathway[J].J Third Mil Med Univ,2012,34(06):744.

[8]卢茜,邓钰双,刘莉,等.姜黄素对N2a/APP695细胞载脂蛋白E表达的影响[J].第三军医大学学报,2014,36(01):46.
Lu Xi,Deng Yushuang,Liu Li,et al.Curcumin suppresses ApoE expression in murine neuroblastoma Neuro2a/APP695 cells[J].J Third Mil Med Univ,2014,36(06):46.

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