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## TRPC3参与电磁辐射致培养的海马神经元凋亡(PDF)分

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**Title:** Electromagnetic irradiation-induced apoptosis in hippocampal neurons through TRPC3

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**关键词:** [电磁辐射](#); [TRPC3](#); [神经元](#); [凋亡](#)

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**摘要:** 目的 研究电磁辐射后, 瞬时受体电位通道蛋白3 (transient receptor potential channel 3, TRPC3) 是否参与诱导海马神经元凋亡。 方法 以65 mW/cm<sup>2</sup>电磁波辐照原代培养的新生24 h以内Wistar大鼠海马神经元20 min, 以未接受电磁波辐照的神经元为对照组, 将TRPC3-siRNA和对照寡核苷酸转染神经元后分别设立为辐照+TRPC3-siRNA干扰组和辐照+TRPC3假干扰组。采用实时定量RT-PCR法及蛋白质免疫印迹法检测TRPC3 mRNA和蛋白水平的表达, 电磁辐射后用CCK8试剂盒比色法检测各组细胞存活率, Annexin V-FITC试剂盒染色后经流式细胞仪检测细胞凋亡, 激光共聚焦显微镜观察胞内游离钙的变化。 结果 电磁辐射可明显增加神经元中TRPC3 mRNA和蛋白表达, 细胞存活率为(58.8±3.6)%, 凋亡率为(30.2±2.6)%, 与对照组有显著差异( $P<0.05$ ); 辐照+TRPC3干扰组细胞存活率为(86.3±4.1)%, 凋亡率为(9.2±0.6)%, 与辐照组有显著差异( $P<0.05$ ); 辐照+TRPC3假干扰组与辐照组无明显差异( $P>0.05$ )。辐照后胞内游离钙浓度显著升高, 而TRPC3干扰后可以部分抑制其升高。 结论 TRPC3表达增加所介导的胞内游离钙升高可能是电磁辐射致海马神经元凋亡的原因之一。

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(TRPC3) plays a role in the apoptosis of hippocampal neurons induced by electromagnetic irradiation. **Methods** Primarily cultured hippocampal neurons of Wistar rats were exposed to  $65 \text{ mW/cm}^2$  electromagnetic wave for 20 min. Real-time RT-PCR and Western blotting were used to detect the expression of TRPC3 at mRNA and protein levels respectively. TRPC3-siRNA or control-siRNA was transfected into the cultured neurons. The viability of the neurons was determined by CCK8 assay, and the apoptosis of neurons were measured by flow cytometry after AnnexinV-FITC staining. **Results** Electromagnetic irradiation markedly increased mRNA and protein expression of TRPC3 and  $[\text{Ca}^{2+}]_i$  in cultured hippocampal neurons. The viability of hippocampal neurons [  $(58.8 \pm 3.6) \%$  ] was obviously decreased and the apoptosis rate was increased [  $(30.2 \pm 2.6) \%$  ] when compared with the control cells ( $P < 0.05$ ). TRPC3-siRNA significantly increased the survival rate [  $(86.3 \pm 4.1) \%$  ] and decreased the apoptosis rate [  $(9.2 \pm 0.6) \%$  ] and partially suppressed  $[\text{Ca}^{2+}]_i$  in the irradiation-treated cells ( $P < 0.05$ ), and TRPC3 false-siRNA treatment did not have these effects ( $P > 0.05$ ). **Conclusion** The enhanced expression of TRPC3 may be involved in the apoptosis in cultured hippocampal neurons after electromagnetic irradiation.

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