

Galectin-3调控Wnt信号通路对脑胶质瘤细胞凋亡的影响

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Title: The effect of Galectin-3 regulated Wnt signaling pathway on apoptosis of human glioma cells

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摘要: 目的:半乳糖凝集素-3 (Galectin-3) 调控Wnt信号通路对人脑胶质瘤细胞凋亡的影响。方法:RT-PCR及Western blot检测人脑胶质瘤组织中Galectin-3的mRNA和蛋白表达; Western blot检测人脑胶质瘤U251、U87、SHG-44细胞中Galectin-3的蛋白表达; 将Galectin-3的特异性siRNA(Galectin-siRNA)转染人脑胶质瘤U87细胞, Western blot、流式细胞术分别检测转染48 h后Galectin-3、Wnt5a、 β -catenin和Cleaved caspase3蛋白表达及细胞凋亡率。结果:Galectin-3在人脑胶质瘤组织mRNA和蛋白表达均显著高于瘤旁组织 ($P < 0.01$); U251、U87、SHG-44细胞中Galectin-3蛋白表达从高到低为U87>U251>SHG-44, 选择U87细胞作为后续研究; Galectin-3-siRNA1的Galectin-3蛋白表达最低, 选择作为后续研究; NC-siRNA组细胞凋亡率、Cleaved caspase3、Wnt5a、 β -catenin蛋白表达与对照组差异不显著 ($P > 0.05$), 与对照组比较, Galectin-3-siRNA组细胞凋亡率明显升高, Cleaved caspase3蛋白表达明显升高, Wnt5a和 β -catenin蛋白表达明显降低 ($P < 0.01$)。结论:沉默Galectin-3表达可诱导人脑胶质瘤细胞凋亡, 机制可能与Wnt信号通路的下调有关。

Abstract: Objective: To investigate the effect of Galectin-3 regulated Wnt signaling pathway on apoptosis of human glioma cells. Methods: The mRNA and protein expression of Galectin-3 in human glioma tissue were detected by RT-PCR and Western blot. Expression of Galectin-3 protein in human glioma U251, U87 and SHG-44 cells were detected by Western blot. Galectin-siRNA was transfected into human glioma U87 cells for 48 h. The expression of Galectin-3, Wnt5a, β -catenin and Cleaved Caspase3 protein and cell apoptosis were detected by Western blot and flow cytometry. Results: The expression of Galectin-3 mRNA and protein in human glioma tissue were significantly higher than those in the tumor adjacent tissues ($P < 0.01$). Galectin-3 protein expression in U251, U87, SHG-44 cells from high to low as U87>U251>SHG-44. U87 cells was selected as a follow-up study. Galectin-3 protein in Galectin-3-siRNA1 was lowest, selected as a follow-up study. The apoptosis rate, Cleaved Caspase3, Wnt5a, β -catenin protein expression in NC-siRNA group and the control group had no significant difference ($P > 0.05$). Compared with control group, the apoptosis rate in Galectin-3-siRNA group were significantly higher. Cleaved Caspase3 protein expression were significantly higher, and the expression of Wnt5a and β -catenin protein was significantly lower than the control group ($P < 0.01$). Conclusion: Silencing of Galectin-3 expression can induce apoptosis of human glioma cells, which may be related to the downregulation of Wnt signaling pathway.

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