

lncRNA BCAR4通过调节Wnt/ β -catenin信号通路对胃癌发生发展的影响

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Title: Effect of lncRNA BCAR4 on the development of gastric cancer by regulating Wnt/ β -catenin signaling pathway

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摘要: 目的: 探讨lncRNA BCAR4通过调节Wnt/ β -catenin信号通路调控胃癌细胞的增殖和凋亡。方法: 通过实时定量PCR法检测lncRNA BCAR4在胃癌组织和胃癌细胞中的表达; 免疫组化方法分析胃组织中c-myc和cyclin D1蛋白的表达; 通过MTT、克隆形成和流式细胞术分别检测lncRNA BCAR4对胃癌细胞SGC7901增殖和凋亡的影响, 并通过Western blot法检测lncRNA BCAR4敲除前后对SGC7901细胞中c-myc、cyclin D1蛋白以及Wnt/ β -catenin信号通路的影响。结果: 相比于癌旁组织以及胃黏膜上皮细胞, lncRNA BCAR4在人胃癌组织和胃癌细胞中表达显著升高 ($P < 0.01$); 同时, c-myc和cyclin D1蛋白的表达在胃癌组织和胃癌细胞中也有所增加, 尤其在SGC7901胃癌细胞中上调最为显著 ($P < 0.01$); lncRNA BCAR4敲除能够显著降低细胞活力, 促进细胞凋亡 ($P < 0.01$)。lncRNA BCAR4敲除能够显著抑制Wnt/ β -catenin信号通路的活化 ($P < 0.01$), 进而降低其下游增殖相关蛋白c-myc和cyclin D1的表达 ($P < 0.01$)。结论: 降低lncRNA BCAR4能够通过抑制Wnt/ β -catenin信号通路的活化, 从而降低下游c-myc和cyclin D1蛋白表达, 导致胃癌细胞的增殖抑制, 促进细胞凋亡。

Abstract: Objective: To investigate the effect of lncRNA BCAR4 on cell proliferation and apoptosis in gastric cancer via regulating Wnt/ β -catenin signaling pathway. Methods: The level of lncRNA BCAR4 in gastric tumor tissues and gastric cancer cells was evaluated by qRT-PCR. Immunohistochemical assay was applied to analyze the protein expression of c-myc and cyclin D1 in gastric tumor tissues. Furthermore, MTT, colony formation and flow cytometry assay were used to determine the proliferation and apoptosis of SGC7901 cells. Finally, Western blot assay was used to test the effect of lncRNA BCAR4 on c-myc and cyclin D1 level and Wnt/ β -catenin signaling pathway under the knockdown of lncRNA BCAR4. Results: Compared with peritumor and gastric epithelial cells, the level of lncRNA BCAR4 in gastric tumor tissues and gastric cancer cells were significantly increased ($P < 0.01$). Meanwhile, the expression of c-myc and cyclin D1 were also increased in gastric tumor tissues and cells, especially in SGC7901 cells ($P < 0.01$). Additionally, suppression of lncRNA BCAR4 could significantly attenuate the cell viability and promote the apoptosis of SGC7901 cells ($P < 0.01$). The inhibition of lncRNA BCAR4 was capable of inhibiting the activation of Wnt/ β -catenin signaling pathway and resulted in decreased expression of its downstream protein c-myc and cyclin D1 ($P < 0.01$). Conclusion: The mechanism of lncRNA BCAR4 on the proliferation and apoptosis of gastric cancer cells was mediated by regulating Wnt/ β -catenin signaling pathway and its downstream proteins.

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