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Wnt5a expression affects the biological behavior of HCC

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Objective: Wnt5a has been shown to be involved in cancer progression in a variety of tumor types and described as both challenges the simplistic classification of gene as tumor promoters or suppressors. Our previous experimental studies have indicated that Wnt5a commands a tumor-suppressing effect and it was shown to be downregulated in hepatocellualar carcinomas. In this study we designed to explore the effects of Wnt5a gene on HCC cell line.

Methods: Human hepatocellular cells of the line Huh7 were transfected with pcDNA3.1-Wnt5a or pcDNA3.1 contruct. The integration of the plasmid DNA and the expression of Wnt5a were confirmed by RT-PCR and Western Blot respectively. Plate colone formation test to calculate the clone formation rate and cell cycle was analyzed by flow cytometry. Scratch assays and Xenograft studies in nude mice were used to examine cell migration. Using Western Blot detect the associated protein of Wnt5a, Ror2, E-cadherin and p53, expression of Huh7 cells.

Results: FCM analysis showed that The G1 and S phase fraction in Huh7 cells with Wnt5a expression vector transfected were 64.92%±2.97% and 21.69%±3.27%, compared with emoty vector transfected cells in S phase fraction decreased but increased in G1 phase fration(57.80%±1.09% and 29.03%±1.32%, all $p<0.05$), suggested pcDNA3.1-Wnt5a transfection suppressed the progression of G1→S phase in Huh7cell cycle. The clone formation rates of pcDNA3.1 group was 16.47%±0.39%, significantly higher than Wnt5a expression group(8.07%±0.37%, $P<0.01$)in the Huh7 cells. The result of scratches assay indicated that scratch after 48 hours, the cells with pcDNA3.1 transfected of the scratch area boundary was not clear and the cells in scrath zone were significantly increased than Huh7 cells with pcDNA3.1-Wnt5a transfected. Wnt5a expression resulted in suppressing the migration of Huh7 cells. In Xenograft studies in nude mice we found that: tumor volumes were significantly decreased in nude mice injected with pcDNA3.1-Wnt5a transfected Huh7 cells compared with null vector pcDNA3.1. Expression of Wnt5a, Ror2 and E-cadherin protein were increased in Huh7 cells which transfected pcDNA3.1-Wnt5a compared with Huh7 cells transfected the null vector. But P53 protein was expression at about the same level in two groups.

Conclusion: Wnt5a expression resulted in suppression cell proliferation and migration. Wnt5a may be a tumor suppressor gene in HCC through Ror2, receptor for Wnt5a, to activate non-canonical Wnt signaling pathway.

Biography

Professor Geng M, the director of the Department of Pathology, General Hospital of Jinan Military Command, has completed his M.D. at the age of 23 years from The Fourth Military Medical University. He is good at the area about pathological diagnosis and research of gastrointestinal tumor. He has published more than 30 papers in reputed journals and serving as an editorial board member of repute. Research projects were supported by the national and provincial natural science funds, and research achievements got awards from the Shandong province and the Army.

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