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《第三军医大学学报》[ISSN:1000-5404/CN:51-1095/R] 卷: 35 期数: 2013年第09期 页码: 850-853 栏目: 论著 出版日期: 2013-05-15

Title: Influence of Tmub1 silencing on proliferation of rat hepatocytes after partial hepatectomy

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关键词: [Tmub1](#); [肝再生](#); [securin](#); [慢病毒](#); [体内转染](#)

Keywords: [Tmub1](#); [liver regeneration](#); [securin](#); [lentivirus](#); [transfection in vivo](#)

分类号: R329.28; R394.2; R657.3

文献标志码: A

摘要: 目的 探讨Tmub1蛋白在肝再生过程中的作用及其在肝再生过程中对Securin蛋白的影响。 方法 54只大鼠随机分为3组即Tmub1 RNAi慢病毒组、空载慢病毒组及正常对照组, 其中Tmub1 RNAi慢病毒组、空载慢病毒组注射相应病毒颗粒(3×10^7 TU), 对照组未行注射, 2 d后行肝部分切除术(partial hepatectomy, PH), 每组分为6个亚组: PH术后0、2、6、12、24、48 h, 每亚组3只大鼠, 术后提取原代肝细胞、留取肝脏组织标本, 利用Real-time PCR和Western blot检测慢病毒干扰效果及Tmub1沉默后对Securin蛋白的影响。MTT实验、流式细胞仪检测原代肝细胞的增殖情况。 结果 Real-time PCR和Western blot表明实验组Tmub1 mRNA和蛋白被有效抑制; Tmub1沉默后securin mRNA表达无明显变化, 而G₂/M期securin蛋白量明显减少。MTT实验表明Tmub1沉默可明显上调PH术后6~24 h肝细胞的增殖速率; 流式细胞分析结果显示实验组处于G₂/M期的肝细胞比例明显增高。 结论 Tmub1蛋白在肝再生过程中对肝细胞增殖进程发挥负向调控作用, 而该作用可能与其在蛋白质水平影响了 Securin 的表达密切相关。

Abstract: Objective To investigate the role of transmembrane and ubiquitin-like domain-containing protein 1 (Tmub1) protein in the liver regeneration and its impact on the expression of securin in the process. Methods A total of 54 adult male SD rats were randomly divided into Tmub1 RNAi lentivirus group, blank lentiviral vector group, and control, and they received an injection of lentivirus (3×10^7 TU) or PBS through ileocaecal vein. In 2 d later, partial hepatectomy (PH) were carried out in all rats. Then the liver tissue was

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collected in 0, 2, 6, 12, 24 and 48 h after model establishment to extract primary hepatocytes and preserve liver tissue. Effect of Tmub1 RNAi lentivirus interference on rat primary hepatocytes was detected by real-time PCR and Western blotting, respectively. Effect of Tmub1 RNAi lentivirus on the growth and cell cycle in rat primary hepatocytes was detected by MTT assay and flow cytometry, respectively. Results Real-time PCR and Western blotting showed that the expression of Tmub1 at mRNA and protein levels was significantly inhibited, and the expression of securin at mRNA level had no change, but the expression of securin at protein level was significantly down-regulated. MTT assay showed that Tmub1 gene silencing significantly improved the proliferation in liver cells in 6 to 24 h after PH. Flow cytometry displayed that the liver cells were arrested in G₂/M phase. Conclusion Tmub1 protein plays a negative role in the process of liver cells' proliferation, which may be closely related to its effect on the expression of securin at protein level.

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