SOCS3对人肝癌MHCC97-H细胞上皮间质转化的影响

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Title: **The effect of SOCS3 on epithelial-mesenchymal transition of human hepatoma MHCC97-H cells**

作者: 卓 飞[1]; 2; 孙 晋[3]; 王志东[1]; 3; 惠 博[1]; 李 亮[3]; 杨正安[1]
1.西安交通大学第二附属医院普外科四病区；3.陕西省肝脾疾病临床研究中心,陕西 西安 710004；2.西安市长安区医院普外科,陕西 西安 710100

Author(s): Zhuo Fei[1]; 2; Sun Jin[3]; Wang Zhidong[1]; 3; Hui Bo[1]; Li Liang[3]; Yang Zhengan[1]
1.The Fourth Ward of General Surgery Department;3.Shaanxi Provincial Clinical Research Center for Hepatic & Splenic Diseases,the Second Affiliated Hospital of Xi'an Jiaotong University,Shaanxi Xi'an 710004,China;2.Department of General Surgery,Xi'an Chang'an District Hospital,Shaanxi Xi'an 710100,China.

关键词: 肝癌; SOCS3; 上皮间质转化; E-cadherin; α-SMA

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摘要: 目的：研究细胞因子信号转导抑制因子3（suppressor of cytokine signaling 3,SOCS3）对人肝癌细胞MHCC97-H细胞上皮间质转化（epithelial-mesenchymal transition,EMT）的影响。方法：体外培养人肝癌高转移细胞株MHCC97-H，应用25 nmol/L的SOCS3 siRNA瞬时转染细胞（阳性转染组），同时使用空质粒转染细胞（阴性对照组）。24 h后用荧光显微镜观察转染后的细胞荧光表达情况。48 h后，应用倒置显微镜观察细胞形态变化情况，采用细胞免疫荧光染色法检测MHCC97-H 细胞中EMT的上皮标志物E-cadherin和间质标志物α-SMA的表达情况。结果：与阴性对照组相比，SOCS3 siRNA成功转染的MHCC97-H细胞显示出绿色荧光。SOCS3 siRNA瞬时转染后肝癌细胞从呈现上皮样特征的鹅卵石形态，向具有间质细胞形态的纺锤形和梭形特征发生转变。免疫细胞荧光检测E-cadherin和α-SMA的表达结果显示，SOCS3 siRNA阳性转染组上皮标志物E-cadherin的免疫荧光表达明显减弱，而细胞的间质标志物α-SMA的免疫荧光表达显著增强。结论：本实验研究显示，下调肝癌细胞的SOCS3表达，其通过改变细胞的EMT表型分子及表型特征，促进肝癌的增殖，提示SOCS3可能在肝癌细胞的EMT中发挥着重要作用。调控SOCS3表达水平可以抑制肝癌的发生发展，为临床防治肝癌提供了新思路。

Abstract: Objective:To investigate the effect of suppressor of cytokine signaling 3 (SOCS3) on the epithelial-mesenchymal transition (EMT) phenomenon of human hepatoma MHCC97-H.Methods:Human hepatoma high-metastatic cell line MHCC97-H was cultured in vitro and transiently transfected with 25 nmol/L SOCS3 siRNA (positive transfection group) and empty plasmid transfected cells (negative control group).After 24 h,the fluorescence expression of the transfected cells was observed with a fluorescence microscope.After 48 h,an inverted microscope was used to observe changes in cell morphology and the expression of epithelial marker and interstitial marker α-SMA in epithelial cells of MHCC97-H cells was detected by immunofluorescence staining.Results:Successfully transfected MHCC97-H cells with SOCS3 siRNA showed green fluorescence compared to negative control group.Transient transfection of SOCS3 siRNA caused cell morphology to change from typical cobblestone morphology to mesenchymal spindle and spindle features.Immunofluorescence detection of E-cadherin and α-SMA showed that the immunofluorescent expression of epithelial marker E-cadherin in the SOCS3 siRNA-positive transfection group was significantly attenuated,while the immunofluorescence expression of the interstitial marker α-SMA was significant enhanced.Conclusion:The results of this study show that down regulation of SOCS3 may play an important role in the EMT of hepatoma cells by changing its EMT phenotype and promoting the development of liver cancer.Regulation of SOCS3

expression could inhibit cancer development,which provides a new idea for clinical prevention and treatment of liver cancer.

参考文献/REFERENCES

[1] Ji YY,Wang ZD,Yang ZA, et al.Effect of IGF-Ⅱon C-myc and N-ras expressions in MHCC97-H cells [J] .Xi'an Jiaotong University (Medical Sciences),2015,36(5):594-599. [姬媛媛,王志东,杨正安,等.IGF-Ⅱ对肝癌细胞MHCC97-H癌基因C-myc和N-ras 表达的影响 [J] .西安交通大学学报（医学版）,2015,36(5):594-599.]
[2]Zheng L,Xu M,Xu J,et al.ELF3 promotes epithelial-mesenchymal transition by protecting ZEB1 from miR-141-3p-mediated silencing in hepatocellular carcinoma [J] .Cell Death Dis,2018,9(3):387.
[3]Dong Y,Wu Z,He M,et al.ADAM9 mediates the interleukin-6-induced epithelial-mesenchymal transition and metastasis through ROS production in hepatoma cells [J] .Cancer Lett,2018,421:1-14.
[4]Giannelli G,Koudelkova P,Dituri F,et al.Role of epithelial to mesenchymal transition in hepatocellular carcinoma [J] .J Hepatol,2016,65(4):798-808.
[5]Yuan K,Lei Y,Chen HN,et al.HBV-induced ROS accumulation promotes hepatocarcinogenesis through Snail-mediated epigenetic silencing of SOCS3 [J] .Cell Death Differ,2016,23(4):616-627.
[6]Chu Q,Shen D,He L,et al.Prognostic significance of SOCS3 and its biological function in colorectal cancer [J] .Gene,2017,627:114-122.
[7]Shang AQ,Wu J,Bi F,et al.Relationship between HER2 and JAK/STAT-SOCS3 signaling pathway and clinicopathological features and prognosis of ovarian cancer [J] .Cancer Biol Ther,2017,18(5):314-322.
[8]Wei L,Huang Y,Zhao R,et al.Detection of promoter methylation status of suppressor of cytokine signaling 3 (SOCS3) in tissue and plasma from Chinese patients with different hepatic diseases [J] .Clin Exp Med,2018,18(1):79-87.
[9]Zhao R,Chen K,Zhou J,et al.The prognostic role of BORIS and SOCS3 in human hepatocellular carcinoma [J] .Medicine (Baltimore),2017,96(12):e6420.
[10]Jiang BG,Wang N,Huang J,et al.Tumor SOCS3 methylation status predicts the treatment response to TACE and prognosis in HCC patients [J] .Oncotarget,2017,8(17):28621-28627.
[11]Zhang X,You Q,Zhang X,et al.SOCS3 methylation predicts a poor prognosis in HBV infection-related hepatocellular carcinoma [J] .Int J Mol Sci,2015,16(9):22662-22675.
[12]Wonganan O,He YJ,Shen XF,et al.6-Hydroxy-3-O-methyl-kaempferol 6-O-glucopyranoside potentiates the anti-proliferative effect of interferon α/ß by promoting activation of the JAK/STAT signaling by inhibiting SOCS3 in hepatocellular carcinoma cells [J] .Toxicol Appl Pharmacol,2017,336:31-39.
[13]Deng G,Zeng S,Ma J,et al.The anti-tumor activities of Neferine on cell invasion and oxaliplatin sensitivity regulated by EMT via Snail signaling in hepatocellular carcinoma [J] .J Hepatol,2016,65(4):798-808.
[14]Qin CD,Ma DN,Ren ZG,et al.Astragaloside IV inhibits metastasis in hepatoma cells through the suppression of epithelial-mesenchymal transition via the Akt/GSK-3ß/ß-catenin pathway [J] .Oncol Rep,2017,37(3):1725-1735.

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