[1]张佩,陈婷婷,叶枫,等.表达SDF-1/HOXB4融合基因的间充质干细胞对造血干细胞体外扩增及干性维持的作用[J].第三军医大学学报,2013,35(07):589-594.

Zhang Pei,Chen Tingting,Ye Feng,et al.Effect of SDF-1/HOXB4 fusion gene-modified mesenchymal stem cells on amplification and stemness maintenance of hematopoietic stem cells in vitro[J].J Third Mil Med Univ,2013,35(07):589-594.

点击复制

导航/NAVIGATE
本期目录/Table of Contents
下一篇/Next Article
上一篇/Previous Article

工具/TOOLS
引用本文的文章/References
下载 PDF/Download PDF(1196KB)
立即打印本文/Print Now
查看/发表评论/Comments
导出

统计/STATISTICS
摘要浏览/Viewed 474
全文下载/Downloads 196
评论/Comments

RSS XML

表达SDF-1/HOXB4融合基因的间充质干细胞对造血及干性维持的作用(PDF)

分享到:

《第三军医大学学报》[ISSN:1000-5404/CN:51-1095/R] 卷: 35 期数: 2013年第07期 页码: 589-594 栏目: 论著 出版日期: 2013-04-15

Title: Effect of SDF-1/HOXB4 fusion gene-modified mesenchymal stem cells on amplification and stemness maintenance of hematopoietic stem cells *in vitro*

作者: 张佩; 陈婷婷; 叶枫; 裴莉; 符刚; 徐双年; 邹仲敏; 张勇
第三军医大学：西南医院血液科，军事预防医学院毒理学研究所

Author(s): Zhang Pei; Chen Tingting; Ye Feng; Pei Li; Fu Gang; Xu Shuangnian; Zou Zhongmin; Zhang Yong
Department of Hematology, Southwest Hospital, Institute of Toxicology, Third Military Medical University, Chongqing, 400038, China

关键词: 腺病毒载体; 间充质干细胞; 造血干细胞; 共培养; 融合蛋白

Keywords: adenovirus vector; mesenchymal stem cells; hematopoietic stem cells; co-culture; fusion gene

分类号: R329.2; R394-33; R394.2

文献标志码: A

摘要: 目的　构建SDF-1、HOXB4和 SDF-1/HOXB4融合基因腺病毒表达载体，转染体外培养的间充质干细胞（mesenchymal stem cells，MSCs），比较其对$CD34^+$细胞体外扩增及干性维持的影响。　方法　全基因合成SDF-1/HOXB4基因序列，以其为模板，经PCR、酶切及测序鉴定，构建表达SDF-1、HOXB4和SDF-1/HOXB4的3种腺病毒载体，转染至293A细胞进行包装和病毒滴度测定，并转染体外培养的MSCs，分别为SDF-1组、HOXB4组和S-H组，转染空腺病毒载体的为阴性对照，转录水平及蛋白水平检测MSCs中外源基因表达。4组MSCs和$CD34^+$细胞共培养7 d，计数细胞并检测其$CD34^+$表达。结果　测序表明3种腺病毒载体构建成功，在293A细胞中成功包装并获取病毒，RT-PCR和Western blot检测3个基因在MSCs细胞中稳定高表达，MSCs和$CD34^+$细胞共培养，扩增细胞数目SDF-1组（9.52±2.24）、S-H组（8.11±2.34）显著高于对照组（4.85±2.53,$P<0.05$），S-H组（$CD34^+$表达为1.85%）较SDF-1组（1.20%）、HOXB4组（1.28%）更利于$CD34^+$细胞干性维持。　结论　表达SDF-1/HOXB4融合基因的MSCs对$CD34^+$细胞体外扩增及干性维持作用更好。

Abstract: Objective To establish mesenchymal stem cells (MSCs) expressing SDF-1, HOXB4 and SDF-1/HOXB4 fusion gene respectively, and to compare their effects on the amplification and stemness main-tenance of umbilical cord blood $CD34^+$ cells *in vitro*. Methods The SDF-1/HOXB4 fusion gene was synthesized, based on which SDF-1 and HOXB4 gene were obtained by PCR, and adenovirus vectors respectively expressing above gene fragments were constructed. Virus particles were packaged in 293A cells and the titer of the virus was determined. MSCs infected with different virus supernatants were divided into a SDF-1 group, a HOXB4 group and a SDF-1/HOXB4 fusion gene group (S-H group), and MSCs infected with the adenovirus lack of target genes was used as control. The mRNA and protein expression of exogenous genes were detected. The 4 groups of MSCs were co-cultured with umbilical cord blood $CD34^+$ cells for 7 d, and then total cell counting and the ratio of $CD34^+$ cells were measured. Results The adenovirus vectors respectively expressing SDF-1, HOXB4 and SDF-1/HOXB4 were successfully constructed, and the MSCs infected with harvested virus supernatants stably and highly expressed the exogenous genes. The modified MSCs of the SDF-1 group (9.52 ± 2.24) and S-H group (8.20 ± 2.34) could significantly increase the total number of hematopoietic cells as compared with the control group (4.85 ± 2.53, $P<0.05$), and the S-H group (the proportion of $CD34^+$ cells 1.85%) showed better effect on stemness maintenance of umbilical cord blood $CD34^+$ cells as compared with the SDF-1 group (1.20%) and HOXB4 group (1.28%). Conclusion The SDF-1/HOXB4 fusion gene-modified MSCs can improve the amplification and stemness maintenance of HSCs *in vitro*.

参考文献/REFERENCES:

张佩, 陈婷婷, 叶枫, 等. 表达SDF-1/HOXB4融合基因的间充质干细胞对造血干细胞体外扩增及干性维持的作用[J].第三军医大学学报,2013,35(7):589-594.

相似文献/REFERENCES:

[1]赵然尊,龙仙萍,刘志江,等.转染hRAMP1的间充质干细胞对心肌梗死后局部血管再生的作用[J].第三军医大学学报,2012,34(15):1496.

Zhao Ranzun,Long Xianping,Liu Zhijiang,et al.MSCs with hRAMP1 overexpression improve revascularization in a rabbit model of myocardial infarction[J].J Third Mil Med Univ,2012,34(07):1496.

[2]黄帆,刘映孜,杨秋珺,等.全反式维甲酸增强骨形态蛋白9诱导间充质干细胞成骨分化作用[J].第三军医大学学报,2013,35(04):328.

Huang Fan,Liu Yingzi,Yang Qiujun,et al.All-trans retinoic acid enhances BMP9-induced osteogenic differentiation in mesenchymal stem cells[J].J Third Mil Med Univ,2013,35(07):328.

[3]罗飞,许建中.基因增强的骨组织工程研究进展[J].第三军医大学学报,2005,27(16):1702.

[4]周长立,任先军,蒋涛,等.Wnt7a基因对大鼠骨髓间充质干细胞增殖及向神经元样细胞分化的影响[J].第三军医大学学报,2013,35(08):702.

Zhou Changli,Ren Xianjun,Jiang Tao,et al.Wnt7a gene stimulates mesenchymal stem cell proliferation and differentiation into neuron-like cells[J].J Third Mil Med Univ,2013,35(07):702.

[5]刘俊,何娅妮,杨聚荣,等.Cubilin反义RNA对大鼠肾小管超负荷重吸收白蛋白的抑制作用[J].第三军医大学学报,2007,29(14):1384.

LIU Jun,HE Ya-ni,YANG Ju-rong,et al.Inhibitory effect of Cubilin antisense RNA on albumin overload in renal tubules in rats[J].J Third Mil Med Univ,2007,29(07):1384.

[6]陈健,李大江,王曙光.腺病毒介导凋亡素基因对裸鼠种植性人胆管癌的治疗研究[J].第三军医大学学报,2007,29(11):1036.

CHEN Jian,LI Da-jiang,WANG Shu-guang.Therapy for xenograft human bile duct cancer in mice mediated by adenovirus containing Apoptin gene[J].J Third Mil Med Univ,2007,29(07):1036.

[7]仝识非,宋治远,姚青,等.小鼠骨髓间充质干细胞的分离与纯化培养的实验研究[J].第三军医大学学报,2007,29(10):907.

TONG Shi-fei,SONG Zhi-yuan,YAO Qing,et al.Cultivation, retrieval and purification of mouse MSCs[J].J Third Mil Med Univ,2007,29(07):907.

[8]苗莉,景涛,何国祥,等.强力霉素可调控的双重稳定表达AT2R的骨髓间充质干细胞的建立[J].第三军医大学学报,2008,30(05):417.

MIAO Li,JING Tao,HE Guo-xiang,et al.Dual-stable expression of angiotensin II type 2 receptor gene medicated by doxycycline regulatable system of mesenchymal stem cells[J].J Third Mil Med Univ,2008,30(07):417.

[9]朱静,冯川,李莉,等.干扰组蛋白乙酰化引发间充质干细胞心肌定向分化特定蛋白的异常表达[J].第三军医大学学报,2008,30(04):303.

ZHU Jing,FENG Chuan,LI Li,et al.ShRNA on histone acetylation induces unusual cardiac-specific protein expression in MSCs differentiation into cardiomyocytes[J].J Third Mil Med Univ,2008,30(07):303.

[10]刘杰,吴雪晖,罗飞,等.自体间充质干细胞构建组织工程骨修复人长骨缺损的临床观察[J].第三军医大学学报,2008,30(09):851.

LIU Jie,WU Xue-hui,LUO Fei,et al.Autogenous mesenchymal stem cells repair long bone defects: clinical report of 30