

[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(814KB)	
立即打印本文/Print Now	
推荐给朋友/Recommend	
查看/发表评论/Comments	
统计/STATISTICS	
摘要浏览/Viewed	
全文下载/Downloads	76
评论/Comments	49

[RSS](#) [XML](#)

TGF- β_1 刺激下损伤的前交叉韧带和内侧副韧带中BMP-1基因的表达(PDF)

《第三军医大学学报》[ISSN:1000-5404/CN:51-1095/R] 卷: 34 期数: 2012年第07期 页码: 647-650 栏目: 论著 出版日期: 2012-04-15

Title: Differential BMP-1 expression in injured anterior cruciate ligament and medial collateral ligament fibroblasts induced by TGF- β_1

作者: 尹琳; 谢静; 蒋稼欢; 王春莉; 张艳君; 许春明; KL Paul Sung
重庆大学生物工程学院国家“111计划”基地; 美国加州大学圣迭亚哥分校骨科与生物工程系

Author(s): Yin Lin; Xie Jing; Jiang Jiahuan; Wang Chunli; Zhang Yanjun; Xu Chunming; KL Paul Sung
“111” Project Laboratory of Biomechanics and Tissue Repair, Bioengineering College, Chongqing University, Chongqing, 400044, China; Departments of Orthopaedics and Bioengineering, University of California, San Diego, CA 9209320412, USA

关键词: 前交叉韧带; 内侧副韧带; 骨形态发生蛋白-1; TGF- β_1

Keywords: anterior cruciate ligament; medial collateral ligament; bone morphogenetic protein-1; TGF- β_1

分类号: R318.01; R322.73; R363

DOI: -

文献标识码: A

摘要: 目的 观察在转化生长因子- β_1 (transforming growth factor beta1, TGF- β_1) 作用下, 损伤的前交叉韧带 (anterior cruciate ligament, ACL) 和内侧副韧带 (medial collateral ligament, MCL) 中骨形态发生蛋白-1 (bone morphogenetic protein-1, BMP-1) 基因的表达, 找出TGF- β_1 、BMP-1之间的关系, 揭示机械损伤后ACL和MCL细胞中BMP-1的表达差异。 方法 采用反转录PCR (RT-PCR) 和实时荧光定量PCR方法检测1、5、50 ng/ml TGF- β_1 处理后2 h受损的ACL和MCL细胞中BMP-1的表达以及5 ng/ml TGF- β_1 作用2、6、12、24 h受损的ACL和MCL细胞中BMP-1的表达; Western blot检测5 ng/ml TGF- β_1 处理48 h后受损的ACL和MCL细胞中BMP-1的表达。 结果 受损的ACL和MCL细胞中BMP-1的基因表达比正常状态下偏高, 并随着TGF- β_1 浓度的增大而增高, 在MCL中的增高程度比在ACL中高出近1倍 ($P<0.05$); 与正常组相比, 在5 ng/ml TGF- β_1 处理24 h后, ACL细胞中BMP-1的表达在24 h达到最高比例 (约为6.1倍), 而在MCL中12 h达到最高比例 (约为9.84倍, $P<0.05$)。5 ng/ml TGF- β_1 处理48 h后BMP-1蛋白也明显上调, 与无TGF- β_1 处理的对照组相比, ACL细胞中BMP-1上调2.32倍, MCL细胞中BMP-1上调3.84倍 ($P<0.05$)。 结论 TGF- β_1 刺激BMP-1的变化可能直接影响到细胞外基质中活性赖氨酸氧化酶的表达, 对损伤ACL和MCL的修复有极其重要的参考价值 and 临床意义。

Abstract: Objective To investigate the differential expression of bone morphogenetic protein-1 (BMP-1) in injured anterior cruciate ligament (ACL) and medial collateral ligament (MCL) fibroblasts induced by TGF- β_1 , and to find out the differences between the poorly self-healing ACL and well functionally self-healing MCL fibroblasts. Methods Fibroblasts were primarily cultured from clinical ACL and MCL samples, and then given 12% mechanical stretch injury and treated by 1, 5 and 50 ng/ml TGF- β_1 for 2 h, or by 5 ng/ml TGF- β_1 for 2, 6, 12 and 24 h respectively at the same time. The expression of BMP-1 in the above treated and untreated fibroblasts were detected by reversed-transcript PCR and real-time quantitative PCR. Western blotting was used to detect the expression of BMP-1 in the injured fibroblasts induced by 5 ng/ml TGF- β_1 for 48 h. Results TGF- β_1 treatment resulted in an increased mRNA expression of BMP-1 in the injured fibroblasts in a dose-depended manner, especially in the cells from MCL than in those from ACL (about 1 times higher, $P<0.05$). Compared with the fibroblasts without TGF- β_1 treatment, 5 ng/ml TGF- β_1 treatment for 24 h made the expression of BMP-1 reach the summit in ACL (6.1 folds higher, $P<0.05$) and in MCL (9.84 folds higher, $P<0.05$). Compared with the control, the protein expression of BMP-1 were elevated to 2.32 and 3.84 folds higher in ACL and MCL respectively after 5 ng/ml TGF- β_1 treatment for 48 h ($P<0.01$). Conclusion TGF- β_1 affects the expression of BMP-1 in the injured fibroblasts, and then directly affects activities of lysyl oxidase in the extracellular matrix, implying its potential significant value and clinical usage in repair of injured ACL.

参考文献/REFERENCES

尹琳, 谢静, 蒋稼欢, 等. TGF- β_1 刺激下损伤的前交叉韧带和内侧副韧带中BMP-1基因的表达[J].第三军医大学学报,2012,34(7):647-650.

备注/Memo: -

更新日期/Last Update: 2012-03-30