

兽医—研究报告

梅花鹿鹿茸间充质层与前成软骨层细胞的培养及SB-431542对其增殖的影响

张璐,韩玉帅,郭斌,王守堂,田学超,冯海华,岳占碰

吉林大学畜牧兽医学院

摘要:

分离培养梅花鹿鹿茸间充质层细胞和前成软骨层细胞,通过研究TGF-β的特异性小分子拮抗剂SB-431542对这两种细胞增殖的影响,探讨TGF-β在鹿茸间充质层细胞和前成软骨层细胞增殖与分化中的调节机制。从生长30天的梅花鹿鹿茸中分离间充质层细胞和前成软骨层细胞,进行体外培养,将传代培养第2代的间充质层细胞和前成软骨层细胞分别在含不同浓度SB-431542(0、1、3、5、8、10 μmol/L)的培养液中培养,48小时后用MTT法测定这两种细胞增殖活性的变化,用SPSS软件对其增殖的差异性进行分析。结果显示,体外培养的鹿茸间充质层细胞呈成纤维细胞样,前成软骨层细胞呈纺锤形或梭形,台盼兰染色显示细胞活性均在90%以上。经SB-431542处理的间充质层细胞的增殖活性低于对照组(P<0.05),而前成软骨层细胞增殖活性高于对照组(P<0.05),且3μmol/L和5μmol/L的SB-431542处理的前成软骨层细胞增殖活性明显高于对照组(P<0.01)。试验表明,TGF-β可能在维持鹿茸间充质层细胞的快速增殖和诱导间充质细胞向软骨细胞分化等过程中起重要的作用。

关键词: 增殖

Culture of Sika Deer Antler Mesenchymal Layer Cells and Prechondrocytes and the Effects of SB-431542 on Their Proliferation

Abstract:

In this study, the sika deer antler mesenchymal layer cells and prechondrocytes were isolated and cultured, and the regulatory mechanism of transforming growth factor-β (TGF-β) to cell proliferation and differentiation of deer antler mesenchymal layer cells and prechondrocytes was explored through the research on the effects of SB-431542, a special small molecular antagonist, on the proliferation of these two kinds of cells. The mesenchymal layer cells and prechondrocytes were isolated from the sika deer antler which had grown for 30 days and cultured in vitro, and then the mesenchymal layer cells and prechondrocytes which had been sub-cultured for the second generation were cultured in culture solution with SB-431542 at different concentrations (0, 1, 3, 5, 8, 10 μmol/L), then MTT assay was performed to detect the changes of cell proliferation activity after 48 hours, and SPSS software was used to analyze the differences of cell proliferation. The results showed that the deer antler mesenchymal layer cells cultured in vitro were fibroblast-like, while the prechondrocytes were fusiform or spindle-shaped, and trypan blue staining showed that the cell activity was above 90%. The proliferation activity of the mesenchymal layer cells treated by SB-431542 was lower than the control group (P<0.05), while the prechondrocytes group was higher than the control group (P<0.05), furthermore, the proliferation activity of prechondrocytes treated by SB-431542 at the concentration of 3μmol/L and 5μmol/L was significantly higher than that of the control (P<0.01). The results indicated that TGF-β might play an important role in the process of maintaining the tachy-proliferation of mesenchymal layer cells and inducing the differentiation of mesenchymal layer cells to chondrocytes.

Keywords: proliferation

收稿日期 2010-10-12 修回日期 2010-11-07 网络版发布日期 2011-05-15

DOI:

基金项目:

PTHrP-IHH信号通路对梅花鹿茸角再生的调控;梅花鹿鹿茸再生相关基因的筛选、克隆及功能分析;优质梅花鹿良种选育与高效快繁关键技术研究与开发;梅花鹿茸角ColX 基因表达分布及调控分析

通讯作者: 张璐

扩展功能

本文信息

- ▶ Supporting info
- ▶ PDF(658KB)
- ▶ [HTML全文]
- ▶ 参考文献[PDF]
- ▶ 参考文献

服务与反馈

- ▶ 把本文推荐给朋友
- ▶ 加入我的书架
- ▶ 加入引用管理器
- ▶ 引用本文
- ▶ Email Alert
- ▶ 文章反馈
- ▶ 浏览反馈信息

本文关键词相关文章

- ▶ 增殖

本文作者相关文章

- ▶ 张璐
- ▶ 韩玉帅
- ▶ 郭斌
- ▶ 王守堂
- ▶ 田学超
- ▶ 冯海华
- ▶ 岳占碰

PubMed

- ▶ Article by Zhang, L
- ▶ Article by Han, Y.S
- ▶ Article by Guo, b
- ▶ Article by Yu, S.T
- ▶ Article by Tian, H.T
- ▶ Article by Feng, H.H
- ▶ Article by Yue, T.P

参考文献:

本刊中的类似文章

1. 杨玉芳 王玄 赵红霞 吕晋慧.金莲花组织培养和快繁体系建立的研究[J]. 中国农学通报, 2011,27(第8期4月): 136-139
2. 韩玉帅 张璐 赵丽红 郭斌 冯海华 岳占碰.SB-431542对梅花鹿鹿茸软骨层细胞增殖的影响[J]. 中国农学通报, 2011,27(第1期(1月)): 362-365
3. 张东旭, 李承秀, 王长宪, 潘银萍, 王丰妍, 张传芹.蕙兰杂交种子的无菌萌发和快速繁殖研究[J]. 中国农学通报, 2009,25(12): 159-164
4. 汤青林, 王志敏, 宋 明, 王小佳, 王平利, 向巧彦.大蒜不定芽的诱导及其增殖系数的调节[J]. 中国农学通报, 2006,22(6): 224-224
5. 张元国 刁家连 李芳 李保华 李志萍.紫芦笋茎尖组培快繁技术研究[J]. 中国农学通报, 2004,20(3): 190-190
6. 蔡宣梅¹, 方少忠¹, 郭文杰¹, 魏翠华², 林真¹.植物生长调节剂及矿质营养对东方百合种球膨大和增殖的影响[J]. 中国农学通报, 2010,26(11): 254-257
7. 翟月婷, 傅玉兰, 姜亮.霍山石斛试管丛生芽增殖影响因素的探讨[J]. 中国农学通报, 2010,26(11): 258-260
8. 丁小维, 梁雪妮, 桂 敏, 侯思名, 刘开辉, 刘飞虎.不同激素配比对康乃馨芽增殖及玻璃化的影响[J]. 中国农学通报, 2006,22(4): 269-269
9. 李庆伟, 梁明勤, 杨红丽.驱蚊草组培快繁技术研究初报[J]. 中国农学通报, 2005,21(12): 299-299
10. 于旭东,吴繁花,裴佐蒂,符常明,胡新文.海南肾茶的组织培养快速繁殖[J]. 中国农学通报, 2009,25(09): 38-42
11. 马生健, 覃金芳, 曾富华.有机添加物对卡特兰组织培养的影响[J]. 中国农学通报, 2010,26(1月份01): 32-35
12. 崔广荣 刘云兵 郭蕾娜.草莓增殖和生根壮苗培养基的筛选[J]. 中国农学通报, 2003,19(6): 210-210
13. 田野, 崔言顺, 娄华, 李建亮, 杨萍萍.胶体金对小鼠细胞免疫的影响[J]. 中国农学通报, 2007,23(6): 7-7
14. 王玉英, 李枝林, 余朝秀.春石斛试管增殖研究初报[J]. 中国农学通报, 2005,21(2): 208-208
15. 张学明, 李德雪, 岳占碰.精原干细胞的体外增殖与分化[J]. 中国农学通报, 2005,21(2): 16-16