

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

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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

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