

论著

Notch信号对视网膜前体细胞分化的作用

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摘要

目的: 观察Notch信号对体外培养的SD大鼠视网膜前体细胞分化的影响。方法: 从胎龄16 d的SD大鼠分离视网膜神经上皮, 采用悬浮法培养视网膜前体细胞。实验分Notch信号抑制组和对照组两组。第14天行免疫细胞化学法分析细胞类型、Notch信号的表达及变化。结果: 视网膜前体细胞大部分表达Notch1胞内段及其下游转录因子Hes1, 少量细胞表达bHLH转录因子NeuroD和Mash1; 自发分化后大量细胞表达bHLH转录因子NeuroD和Mash1, 少量细胞表达Notch 1胞内段和Hes1。Notch信号抑制组Nestin,GFAP阳性率显著低于对照组, β -tubulin阳性率显著高于对照组, 而Recoverin阳性率与对照组差异无统计学意义。结论: Notch1信号在体外可能参与了对视网膜前体细胞分化的抑制, 抑制Notch信号可部分促进视网膜前体细胞向神经元分化, 同时抑制了神经胶质细胞的分化。

关键词 [前体细胞](#) [视网膜](#) [Notch](#) [bHLH](#)

分类号

Role of Notch signaling in differentiation of retinal progenitor cells

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Abstract

Objective To investigate the role of Notch signaling in differentiation of Sprague-Dawley (SD) rat retinal progenitor cells (RPCs). Methods RPCs were isolated from 16-day embryonic SD rats and cultured in suspension. RPCs were cultured respectively in media with (treatment group) or without (control group) γ -secretase inhibitor X which was used to block Notch signaling. Morphological observation and immunocytochemistry were applied at day 14 to determine the cell types and analyze the expression of Notch pathway genes in both groups. Results Most RPCs expressed Notch1 intracellular domains or its downstream transcriptional factor Hes1. A few expressed bHLH transcriptional factors NeuroD and Mash1. Most auto-differentiated RPCs expressed NeuroD or Mash1, while a few of them expressed Notch1 intracellular domains or Hes1. In the group treated with γ -secretase inhibitor X, the positive rate of Nestin or GFAP was much lower than that in the control group while the positive rate of β -tubulin was much higher than that in the control group. The difference in the positive rate of Recoverin between the two groups was not significant. Conclusion In vitro Notch signaling may inhibit retinal stem cells differentiation. Inhibiting Notch signaling in vitro may promote differentiation to neurons and partially inhibit glial differentiation.

Key words [progenitor cells](#) [retina](#) [Notch](#) [bHLH](#)

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