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## 基础医学

### 地黄多糖诱导大鼠BMSCs向神经样细胞分化中对Notch信号通路的影响

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摘要:

**目的** 探讨地黄多糖诱导大鼠骨髓间充质干细胞(BMSCs)分化为神经样细胞过程中对Notch信号通路的影响。  
**方法** 以大鼠BMSCs为研究对象, 取P3~P5代细胞随机分为正常对照组(CON组)与地黄多糖诱导组(RGP组), 诱导后连续培养7d。以免疫细胞化学法和Western blotting检测诱导后0、1、3、7d各时点Notch1、Jagged1蛋白和Notch1胞内段NICD蛋白的表达, Real-time PCR检测Notch信号通路相关分子mRNA。结果免疫荧光法检测显示, RGP组与CON组比较各时点Notch1蛋白表达阳性率差异有统计学意义( $P<0.01$ ), 且随时间变化Notch1蛋白表达阳性率逐渐降低; Jagged1蛋白阳性细胞率从诱导结束0d到诱导后1d具有明显的上升趋势, 1d到7d显著下降, 各时点比较差异有统计学意义( $P<0.05$ ), CON组与RGP组各时点比较差异具有统计学意义( $P<0.05$ ); Western blotting检测结果与免疫荧光检测结果相似。Real-time PCR检测显示, RGP组Notch1 mRNA随时间变化表达下降, Presenilin1表达先降低后略有回升, Hes1表达下降, Mash1表达升高, Jagged1表达先升高后降低, 各时点与CON组比较差异有统计学意义( $P<0.01$ )。结论 地黄多糖在诱导BMSCs向神经样细胞分化过程中抑制Notch1蛋白的表达, 并影响Notch信号通路相关基因的表达。

**关键词:** 地黄多糖; 骨髓间充质干细胞; Notch信号通路; 诱导; 神经样细胞

### Effect of rehmannia glutinosa polysaccharide on Notch signal pathway in rat bone marrow mesenchymal stem cells during differentiation into neuron-like cells in vitro

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Abstract:

**Objective** To explore the effect of rehmannia glutinosa polysaccharide (RGP) on rat bone marrow mesenchymal stem cells (BMSCs) differentiation into neuron-like cells and Notch signaling pathway.  
**Methods** Rat BMSCs were experimented as the object, the P3-P5 generations of BMSCs were randomly divided into the control group and RGP group(0.2mg/mL), and induced and cultured for 7 days. Immunocytochemistry assay and Western blotting method were used to detect Notch1, Jagged1 protein and intracellular domain of Notch 1(NICD) expressions at 4 point in time (0,1,3 and 7day) after the induction. The molecular mRNA expression and changes related to the Notch signaling pathway were analyzed by Real-time PCR. **Results** Immunofluorescence assay showed that the Notch1 protein expression of BMSCs decreased over time in the RGP group, positive cell percentage decreased likewise, which was significantly different from the control group( $P<0.01$ ). The Jagged1 positive cell rate of RGP group increased from induced end 0d to 1d after the induction, decreased significantly from 1d to 7d, and there was significant difference between each time point comparison ( $P<0.05$ ), also different from the control group( $P<0.05$ ). Western blotting results were similar to that of the immunofluorescence method. Real-time PCR showed that Notch1 mRNA expression decreased over time. Presenilin1 decreased and then went up mildly afterwards, Hes1 decreased, Mash1 increased, and Jagged1 increased then decreased in the RGP group, which were significantly different from the control group at all durations( $P<0.01$ ). **Conclusion** RGP might restrain Notch1 protein expression during BMSCs differentiations into neuron-like cells in vitro, and influence the related molecular mRNA expression of the Notch signaling pathway.

**Keywords:** Rehmannia glutinosa polysaccharide; Bone marrow mesenchymal stem cells; Notch signal pathway; Induction; Nerve-like cells

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