

研究论文

大鼠骨髓间充质干细胞分化过程的比较蛋白质组学研究

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摘要 从蛋白质组学角度分析大鼠骨髓间充质干细胞(MSCs)体外定向分化为心肌细胞过程中蛋白表达情况, 采用二维电泳分离蛋白, 用PDQuest软件分析蛋白表达差异, 并采用质谱(MALDI-TOF-MS)进行鉴定, 得到了54个蛋白点, 对蛋白的生物功能分析表明, 部分蛋白通过不同的信号途径参与了MSCs的分化过程.

关键词 [骨髓间充质干细胞](#) [蛋白质组学](#) [分化](#) [机理](#)

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Comparative Proteomics Analysis of Rat Mesenchymal Stem Cells During Induced Differentiation

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Abstract Bone marrow mesenchymal stem cells(MSCs) can be differentiated into cardiomyocytes with the induction of 5-azacytidine *in vitro*, and the induced cardiomyocytes can be used for cell transplantation for cardiac diseases. In the present study, the protein profiling of rat MSCs was investigated by two-dimensional gel electrophoresis(2DE). According to the data analysis by PDQuest, 24 protein spots showed up-regulation, and 14 protein spots showed down-regulation during MSCs differentiation. However, there were 9 protein spots expressed only in undifferentiated MSCs, and 19 protein spots were detected in differentiated cells but not MSCs. Altered proteins were digested by trypsin and subjected to MALDI-TOF-MS analysis for peptide mass fingerprinting(PMF). Fifty-four proteins were identified successfully from NCBI and/or SWISS-PROT databases. Among the identified proteins, there were 20 proteins showed up-regulation, and 4 proteins down-regulated during the induced differentiation of MSCs. According to the previous reports of their function, these regulated proteins may be involved in the differentiation of rat MSCs. Our data suggested that proteomics can be used to highlight the study of molecular mechanism of cell differentiation.

Key words [Bone marrow mesenchymal stem cells\(MSC\)](#) [Proteomics](#) [Differentiation](#) [Mechanism](#)

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