

## **The Proteomic Analysis of an Adipocyte Differentiated from Human Mesenchymal Stem Cells Using Two-Dimensional Gel Electrophoresis**

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### **Abstract**

Adipose tissues play a crucial endocrine role in controlling whole body glucose homeostasis and insulin sensitivity. Given the substantial rise in obesity and obesity-related diseases such as diabetes, it is important to understand the molecular based on an adipocyte differentiation and its control. The protein expression of adipogenic differentiation was analyzed by 2-dimensional gel electrophoresis (2-DE), MALDI-TOF, and RT-PCR. The study was focused on the proteins which are differentially expressed by differentiation of hMSC to adipocyte. 2-DE was conducted for each set of cytosolic proteins of adipocyte differentiated from hMSC were analyzed by 2-DE over the range of pH 3-10. Thirty-two protein spots showed differences in the expression level. Among them eight up-regulated proteins were identified by MALDI-TOF/MS as syntaxin binding protein 3, OSBP-related protein 3, phosphodiesterase, glycophorin, immunoglobulin kappa chain variable region, PPAR- $\gamma$ , bA528A10.3.1 (novel protein similar to KIAA01616, isoform 1), and T cell receptor V- $\beta$  4. Four proteins, syntaxin-3, OSBP-related protein 3, PPAR- $\gamma$  and glycohpopin were found to have relationships with adipogenesis.

### **References**

1. Jiang, Y., Jahagirdar, B. N., Reinhardt, R. L., Schwartz, R. E., et al., Pluripotency of mesenchymal stem cells derived from adult marrow(2002) *Nature*, 418, 41-49.
2. Pittenger, M. F., Mackay, A. M., Beck, S. C., Jaiswal, R. K., et al., Multilineage potential of adult human mesenchymal stem cells (1999) *Science*, 284, 143-147.