Comparison of cytokine expression in mesenchymal stem cells from human placenta, cord blood, and bone marrow.


Hwang JH, Shim SS, Seok OS, Lee HY, Woo SK, Kim BH, Song HR, Lee JK, Park YK.

Department of Obstetrics and Gynecology, School of Medicine, Korea University, Seoul, Korea.

**Abstract**

Mesenchymal stem cells (MSCs) are capable of self-renewal and differentiation into lineages of mesenchymal tissues that are currently under investigation for a variety of therapeutic applications. The purpose of this study was to compare cytokine gene expression in MSCs from human placenta, cord blood (CB) and bone marrow (BM). The cytokine expression profiles of MSCs from BM, CB and placenta (amnion, decidua) were compared by proteome profiler array analysis. The cytokines that were expressed differently, in each type of MSC, were analyzed by real-time PCR. We evaluated 36 cytokines. Most types of MSCs had a common expression pattern including MIF (GIF, DER6), IL-8 (CXCL8), Serpin E1 (PAI-1), GROalpha(CXCL1), and IL-6. MCP-1, however, was expressed in both the MSCs from the BM and the amnion. sICAM-1 was expressed in both the amnion and decidua MSCs. SDF-1 was expressed only in the BM MSCs. Real-time PCR demonstrated the expression of the cytokines in each of the MSCs. The MSCs from bone marrow, placenta (amnion and decidua) and cord blood expressed the cytokines differently. These results suggest that cytokine induction and signal transduction are different in MSCs from different tissues.