

# CELL & STEM CELL RESEARCH

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## The effect of human umbilical cord blood mesenchymal stem cells on the expression of leukaemic inhibitory factor (*LIF*) and interleukin-10 (IL-10) in acute myeloid leukaemia (AML)

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Haematological malignancies represent approximately 7% of all malignant diseases. Acute myeloid leukaemia (AML) is an aggressive and fatal disease. AML treatment basically remained unimproved in the last 20 years, and depends upon induction of cytotoxic chemotherapy. An average less than 30% of AML patients survive for long-term. Mesenchymal stem cells (MSCs) are currently being investigated for an ever-expanding number of clinical indications based on their tissue-regenerative, immunomodulatory, and anti-inflammatory effects. The aim of the present work is to detect the effect of human umbilical cord blood-derived mesenchymal stem cells (HUCB-MSCs) on the expression of the leukaemic inhibitory factor gene (*LIF*) and on interleukin-10 (IL-10) in AML-patients. The MSCs were separated from HUCB, and co-cultured with samples collected from peripheral blood (PB) of AML-insulted adults prior to chemotherapy. The expression of *LIF* gene and the IL-10 level were measured using the real-time polymerase chain reaction (qPCR) and enzyme-linked immunosorbent assay (ELISA) techniques, respectively before and after the co-culture in order to evaluate the immunomodulatory effect of the MSCs. The present study revealed that the group of AML cells co-cultured with HUCB-MSCs showed a significant increase in the expression level of *LIF* gene compared with the untreated group. The group of AML cells co-cultured with MSCs showed a significant decrease in the IL-10 concentration compared to that of the untreated group. Our data demonstrated that co-culture of AML with MSCs represents a simple approach to inhibit leukaemic cells *in vitro*.

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